IDG.net

Bet the business

UPI is gambling that the Internet can make it profitable for the first time. **39**

A double dose of NT

IS pros aren't letting politics get in the way of NT decisions. **64**
And NT isn't the obvious choice to run your intranet. **Follows page 32.**

COMPUTERWORLD

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Seeking truth in millennium planning

GM's Y2K assurances come under scrutiny

By Matt Hamblen

AS THE WORLD'S largest publicly traded company, General Motors Corp. arguably faces the biggest year 2000 problem in the private sector.

With $178 billion in annual revenue, 647,000 employees and 350 factories worldwide, GM has identified more than 500,000 devices and systems that could present problems. And it must worry about the in-

GM, page 88

Big business skimps on Y2K disclosures

By Thomas Hoffman

TRYING TO FIGURE out how far your suppliers and partners have come in addressing the year 2000 problem?

Don't count on disclosures that publicly held companies are required to make to the Securities and Exchange Commission. They probably aren't very meaningful, according to a study to be released this week by Giga Information Group.

Big business, page 88

Compaq will back Tandem, DEC legacies

By Jaikumar Vijayan

A TOP Compaq Computer Corp. official last week maintained that the company will continue to develop proprietary technologies such as Digital's OpenVMS and Tandem's NonStop Kernel operating systems.

Responding to user concerns that Compaq has said too little about those and other inherited technologies, Enrico Pesatori, vice president of worldwide marketing, said, "You cannot simply walk away from all this."

Speaking one week after Compaq concluded its Digital deal and one year after the Tandem takeover, Pesatori said, "We will continue to enhance these systems." The Houston-based company has a schedule of upgrades in place for Tan-

Compaq, page 89

MIKE SEKLOW

Union Pacific engineering manager Mike Sundberg

The Year 2000 CHRONICLES

Years ago, Union Pacific Corp. built a $6 million computerized railcar to inspect thousands of miles of tracks. Then a thought struck engineering manager Mike Sundberg: What if it wasn't ready for 2000?

It turned out Sundberg's question was on the money; the railcar's software had to be fixed. As companies get deeper into their year 2000 projects, they are discovering a variety of industry-specific "gotchas," from medical devices to gas pipeline equipment. And now financial services companies such as Merrill Lynch & Co. are doing triage on thousands of end-user spreadsheets.

Chapter three

This week, *Computerworld* presents the third in a series of articles tracking the progress of six companies as they advance toward 2000. **Page 26**

☞ **$40,000 starting salaries.** Sign-on bonuses with every offer. **Pick of projects.** The diary of **Julia Peker** reveals one helluva job market for IT grads **(IT Careers, page 71).** And this "unbelievable" wealth is **wreaking havoc** on existing pay scales **(News, page 4).**

MARK LUINENBURG

Users hope Nortel deal bolsters Bay

By Bob Wallace

USERS WANT Nortel, Inc.'s pending acquisition of Bay Networks, Inc. to mean more and better data networking products, but some fear a repeat of the organizational problems that had hamstrung Bay for years.

Carrier equipment giant Nortel last week detailed plans to acquire LAN and WAN vendor Bay for $9.1 billion and to merge it with its own data network group to run as a wholly owned subsidiary carrying the Bay name. The only organiza-

Bay Networks, page 14

NEWSPAPER

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UP FRONT

Bad timing

The Intel-based server market, once a clubby sandbox for a small group of vendors, is suddenly getting crowded. But the timing seems a little odd to me.

Server prices have dived in the last year, thanks to aggressive new competition. Dell Computer has made servers one of its core growth areas. IBM Chairman Lou Gerstner has expressed frustration with the company's Intel-based server performance and vowed to reinvigorate the Netfinity line. Last week, Hitachi and Toshiba entered the fray. Competition means lower prices, and that's a good thing for buyers. But I wonder if all this new competition isn't coming just as the market is due for a correction. The problem is Windows NT, which most Intel-based servers run. Version 4.0 doesn't scale up very well to large machines, and NT can be a bear to manage when more than a few servers are involved.

Users will be sweating bullets at this time next year.

So everyone is waiting for NT 5.0, which the guesstimates say won't ship before the middle of next year. But a lot of users will be sweating bullets at this time next year trying to finish year 2000 conversion projects. Paradoxically, major new competition and innovation could hit the market just as buyers are least able to absorb it. Demand is already slowing somewhat; International Data forecasts PC server growth rates will slip to 22% this year from 41% in 1997. This is still a market for midsize businesses and small corporate applications.

Falling prices are great for customers, but the conditions that make server demand really take off could still be a couple of years away.

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THE FIFTH WAVE

E-Mail Rich Tennant at thewave@tiac.net

Web browsers need higher power

▸ *Netscape, Microsoft updates may not answer users' prayers*

By Carol Sliwa

NETSCAPE COMMUNICATIONS Corp. and Microsoft Corp. are preparing updated World Wide Web browsers with glitzy features to help users more easily find information.

But many corporate managers say they could care less about more cool features. They are far more interested in the capabilities that will help them build business-critical Web applications: support for standards, stronger security and speedier performance.

"The mainstream browsers, Netscape Navigator and Internet Explorer, are both comparably featured, and both pretty much do what people need them to do," said David Sims, technical manager at Schlumberger Ltd. in Sugar Land, Texas.

Sims said he is more interested in security features, such as digital certificates and public key infrastructure. Schlumberger uses a browser-based application to let employees view and change their benefits. "Obviously, that's a sensitive sort of thing to put on the network, so we had to focus a lot on security," Sims said.

Schlumberger's David Sims wants browser security

Neil Fox, manager of advanced development and applied technology at TRW, Inc. in Cleveland, said he would like the browser to provide "a more robust application environment" where data can be updated in real time.

"Even with all the new Java [graphical user interface] tools, it's still very difficult," Fox said. "I'd like it to be as easy and practical to develop Web applications as it is to develop client/server applications."

Meanwhile, full support for HTML 4.0 and Cascading Style Sheet 2.0 standards would make Rick Waugh's life easier. The systems analyst at Telecom, Inc. in Vancouver, British Columbia, said his company's intranet currently has more than 100,000 pages, and the standard for style sheets would help webmasters maintain a common look and feel.

"With every release of [Netscape] Communicator, I'm waiting to see if there's going to be increased support [for such standards]," Waugh said. Though Communicator 4.5 is set for release this fall, a Netscape product manager said full support for those standards won't be available until the 5.0 browser. That is due to start beta testing by year's end.

Waugh said he also wants Netscape's client to have up-to-date Java support. But Waugh said he would be content to use Netscape's Mission Control management tool to install the Java Plugin from Sun Microsystems, Inc. on his 8,000 user desktops.

But Java's speed remains an issue. Bruce Brunette, a senior analyst/programmer at Thilmany Paper Co. in Kaukauna, Wis., said his company is using Java and Microsoft's transaction server to develop a variety of applications, from order-entry to customer service.

"[Java] does tend to be slower than the old stuff, but we're hoping that will alleviate itself in time," Brunette said. □

New features in Netscape's Communicator 4.5 include:

- **Smart browsing** that helps users find information by typing in generic keywords, such as "shoes" or "cars"
- **Flexible roaming access**, which lets users access browser preferences, mail or calendar entries from any machine (including palmtop computers) with Internet access
- **Mission Control Desktop** that lets IT managers distribute automatic Communicator upgrades
- Improved **Java support**
- **Confirmations** that mail has been opened

McDonald's trims fat

By Roberta Fusaro

IN RESPONSE TO sluggish U.S. sales, McDonald's Corp. will implement its first layoffs in the company's 43-year history.

McDonald's last Wednesday said it will seek to eliminate about 525 positions from its 2,300-member headquarters staff — 23% of the workforce there — in the next 18 months. The company expects most of the staffing cuts will come through buyouts and early retirement.

A spokesman said IS is likely to be somewhat more affected by the cuts than other home-office departments. That's because of technologies coming online that will help the home office become more efficient, he said. The spokesman said he had no more specifics.

Newspaper reports said the first wave of layoffs is likely to occur in about a month. □

Online this week

David Kramer hates spam more than you do — and the lawyer is doing something about it. **In Depth, page 69**

Web sites that cover the World Cup are the most heavily trafficked sports sites ever. **Internet Commerce, page 41**

Bell Canada's Tim McCutcheon says users want to build temporary analysis applications on their own. **Software, page 55**

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ETC.

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YEAR 2000

General Motors contends its millennium fixes are on track — and critics blast it for providing too little evidence. **1**

Only one in four companies provide year 2000 project cost estimates in SEC filings, a new report says. **1**

Users switch from homegrown software to packaged apps, partly for year 2000 support. **8**

Year 2000 Chronicles: Industry-specific gotchas continually pop up, forcing companies such as Union Pacific and Merrill Lynch to adapt to unexpected bugs. **26**

Public companies fail to report their year 2000 progress; SEC considers making them do so. **39**

Sky-high pay for IT grads blows ceiling

▸ *Factors: Labor shortage and strong economy*

By Barb Cole-Gomolski

LAST WINTER, while a senior at Stevens Institute of Technology in Hoboken, N.J., Han Yi was fielding multiple job offers with salaries at about $47,000.

Now a software developer at Bellcore in Parsippany, N.J., Yi is like a lot of computer science majors who easily secured lucrative jobs long before their recent graduations.

But soaring salaries for college graduates have forced companies to re-examine their information systems pay scales to placate IS veterans who resent the highly paid recruits.

"Kids just out of school making $50,000 to $60,000 a year is unbelievable to me," said Joan Jennerjahn, director of business systems at Fleet Credit Card Services in Horsham, Pa.

Jennerjahn started her career as a bank teller 20 years ago, earning about $6,000 per year. "It took me years to make $50,000," she said.

A salary survey in April by the National Association of Colleges and Employers in Bethlehem, Pa., showed that the average salary for a computer science graduate was about $41,000 this year, up from $36,000 last year. And offers in the $50,000 to $60,000 range aren't uncommon, especially in the Northeast.

UNSETTLING NEWS

Inflated starting salaries get noticed, particularly by IS professionals who were hired in the past three to five years, said Paul Kostek, president-elect of the Institute of Electrical and Electronics Engineers, Inc. in Washington.

"If people were hired during [the mid-1990s] — when salaries were relatively flat — they may find that they are making less than some of these recent college graduates," Kostek said.

That was the case at Computer Task Group, Inc., a Dallas-based information technology consultancy with 5,500 employees. The company has had to re-evaluate salaries across the board and is giving what it calls "competitive advantage" raises to many employees, according to Cathy Peterson, director of corporate recruiting.

Peterson said the company has little choice if it wants to hold on to its IS talent.

"You get a ripple effect throughout the entire IS organization," said Tom Samson, national director of IT staffing services at Pro Staff Personnel Services in Irving, Texas.

"If organizations don't adjust the salaries of experienced IS staffers, recruiters will come in and strip them dry," he said.

Hiring companies attributed the stellar salaries for graduates to the strength of the economy and the IS labor shortage.

How companies win over recent graduates

- Starting salaries ranging from $40,000 to $60,000
- Signing bonuses of up to $10,000
- Immediate stock options

"This has been the toughest year we've had in recent memory," said Al Jones, manager of college recruiting at American Management Systems, Inc., an IT consultancy in Fairfax, Va., that will hire about 780 college graduates this year.

As a result of the competitive market for college graduates, American Management Systems has had to widen its recruiting net to include non-computer science students who have an interest in a technical job, Jones said. For example, a liberal arts major who worked in the college computer center or stumbled upon information technology in an internship could possibly land a job with the company, he said.

The job market is so good for young graduates with computer science backgrounds that hiring managers said they worry about no-shows — applicants who accepted jobs last winter but fail to report for work on their starting date because they received a better offer. □

An IT grad-to-be's diary shows that rewards come with the territory. Page 71.

268 content producers
+ 33 sales associates
+ 17 marketing managers
+ 12 web designers
+ 10 department heads
+ 6 copy editors
+ 5 HR managers
+ 1 web master

= Chaos

268 content producers
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NETObjects

Online dealerships ease process of buying autos

▸ Chrysler pilot lets customers pick dealer, get quotes via 'net

By Bob Wallace

WHY VISIT A car dealership when you can outfit your dream vehicle online and have the dealer of your choice E-mail a price quote to your home?

Chrysler Corp. last week detailed a program that will make that possible using the Internet.

In a two-state pilot program, the automaker found that this type of online price quoting led to twice the sales as that of walk-in dealership showroom traffic.

"This shows that our creating a showroom in the home works," said Rich Everett, director of strategic technologies at Chrysler in Auburn Hills, Mich. "Consumers can get the information they need without leaving their homes."

Consumers can have price quotes for the 1999 Jeep Grand Cherokee E-mailed to their homes

NOT QUITE THERE

"This is a concept in its infancy, one that will eventually become mainstream," said Chris Denove, director of consulting at J. D. Power & Associates' retail and distribution practice in Agoura Hills, Calif. "But today, shoppers are using the 'net as an information tool, not as a means of avoiding dealerships. So I don't think shoppers are looking to avoid the traditional dealership process."

General Motors Corp. has a similar program, GM BuyPower, under way on the West Coast, he noted.

The Chrysler scheme pulls actual dealerships into the shopper's practice of using the Internet to gather information and choose a vehicle.

A consumer need only visit a company World Wide Web site — Chrysler, Dodge, Plymouth or Jeep — and click on the "Get-A-Quote" icon. After selecting and equipping a vehicle, the customer chooses a dealer, and the setup is E-mailed there.

The dealer must respond with a price quote within 48 hours and let the consumer know if the desired vehicle is in stock or must be ordered from the factory, Everett said. Participating dealers need a PC with a browser, Internet access and a 'net-trained person to do the work.

So far in the California/Maryland pilot of the system, 29% of consumers who received quotes bought the vehicles, said Christine MacKenzie, manager of retail strategies at Chrysler. She wouldn't say how many consumers received quotes. A couple of thousand vehicles have been sold this way, she said.

Technology has been something of an impediment to the pilot. "Some dealers are really into it and see it as the way the world is going. But others don't want it because they're intimidated by the technology," MacKenzie said.

The program, which is due to go nationwide in the fourth quarter to the automaker's highest-ranked "Five-Star" dealers, has one Dodge dealer concerned.

"Part of the selling process is selling the dealership and what it has to offer," said Charles Arbeene, general manager at MetroWest Dodge in Hudson, Mass. Getting consumers into the dealership is key to that, he added. "Would I be interested in participating? I don't know yet. I need [more] details on the program," Arbeene said.

Offering the program to only its highest ranked of 4,000 dealerships might not be a good idea, Arbeene added. Chrysler is revising its Five-Star status, and only 17% of its dealerships have met the requirements so far. "You'd have a lot of dealers up in arms because there's more non-Five-Star dealers than there are Five-Star dealers. The program might not work," he said. □

HMO giant launches E-payment program

▸ Goal is to speed physician payments, reduce claim errors

By Sharon Machlis

AETNA U.S. HEALTHCARE, the nation's largest for-profit health maintenance organization (HMO), is rolling out an electronic claims program to speed payments to member physicians and reduce claims-processing errors.

The Blue Bell, Pa., HMO, a unit of Aetna, Inc., announced a pilot program last week that pledges to pay doctors within 15 business days if they submit referrals and claims through E-Pay. The program will be instituted in northern New Jersey next month and the New York City area by August, with plans to go national next year.

"What [Aetna] is doing is not necessarily unique, but the fact that Aetna is doing this is key because they are such a big player," said Bruce Gordon, a senior health plan systems consultant at American Management Systems, Inc. in Fairfax, Va.

FAST PAYMENTS

Aetna hasn't calculated how much it might save by taking in electronic claims instead of manually entering data received on paper, said David Kirshenbaum, general manager of electronic commerce at Aetna U.S. Healthcare. But the company hopes that E-Pay will ease doctors' complaints that the entire HMO industry is sluggish in reimbursing them for treating HMO members.

Aetna also expects to boost the quality of data initially submitted from doctors' offices.

"You can't believe how many [claims] we get on paper with a . . . code that doesn't exist," Kirshenbaum said. Electronic-entry software wouldn't allow nonexistent diagnosis codes to be entered.

For doctors running their own practices — essentially small businesses with payroll, rent and other bills coming due — timely payment is crucial, said Bernard Schayes, a New York physician who said he plans to sign up with E-Pay.

He recalls battling with another health insurer for a month's worth of reimbursements that went unpaid because the insurer misplaced its paperwork. It took about six months — and a lot of staff time — to get the money.

But it may be a challenge to get doctors' offices to use the E-Pay software consistently.

In the northern New Jersey test market, about 80% of the HMO's doctors already have connections to Envoy Corp., a Nashville-based medical electronic data interchange (EDI) company, Kirshenbaum said. However, some doctors use their existing EDI capabilities for as little as 10% of claims. Aetna hopes E-Pay will provide added incentive.

"My staff is like everybody else. They don't like to change," Schayes said. "I think once we are online and doing it this way, they will like it." □

Senior editors Thomas Hoffman and Barb Cole-Gomolski contributed to this report.

MOREONLINE

For resource links on electronic payments and digital money, visit *Computerworld online.*
www.computerworld.com/more

The more you trade, the lower the price

By Sharon Machlis

INTERNET INVESTING

EVERYBODY TALKS ABOUT one-to-one marketing on the Internet. But the flip side of that is more sharply targeted pricing.

Next month, Fidelity Investments will restructure its online stock trading commissions to keep pricing low for both active and well-heeled investors, while raising it for the rest.

"It's a fairly well-chosen set of prices," said Alex Stein, one of the founders of Gomez Advisors in Boston, which follows the market for online investing.

The opportunity to customize pricing comes into play here because active investors are more price-sensitive than consumers looking for the convenience and full service of one-stop shopping, he said.

Under Fidelity's pricing plan, which will take effect July 17, 12 or more stock trades per year qualifies an investor for the active trader discount price of $14.95 per trade. Currently, 36 trades per year are needed to get the lowest rates.

In addition, any customer with at least $100,000 in mutual fund investments will qualify for the discounted price, regardless of trading activity.

For those who don't get the preferred rates, the online trade price will rise from $19.95 to $25 per trade. That is still less than online brokerage leader Charles Schwab & Co., which charges $29.95.

Most full-service financial institutions moving into the online brokerage arena have been looking to Schwab's example for pricing levels. They have declined to get involved in the price wars at the lower end of the market that have driven some providers to charge less than $10 per trade.

BankAmerica Corp. and Wells Fargo & Co., both in San Francisco, recently said their new or revamped online brokerages would be charging prices in line with Schwab. □

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Packaged apps run up against Y2K clock

▸ *Deadline forces users to streamline projects*

By Craig Stedman

USERS RUSHING TO fix their year 2000 problems by installing packaged applications are starting to run up against the clock, prompting them to look for ways to streamline the projects.

The window for getting a year 2000-compliant enterprise application suite up and running in time is on the verge of closing, analysts said. Even midsize companies may need a year or more to finish an installation, they noted. And for complex projects that go across multiple sites, the advice was short and not so sweet: "fuhgedaboudit."

Mays Chemical Co. is watching the calendar warily. The Indianapolis-based distributor of chemicals began implementing Lawson Software, Inc.'s packaged applications this spring and plans to wrap up the year 2000-driven project next April.

But some customization work is on the agenda, and Mays is still looking for add-on software that can handle warehouse management and other jobs.

"It does look doable, but we're going to have to get a lot done in a short time," said Mays project manager Randy Randol. In some cases, the lack of time may force Mays to modify the company to fit the software rather than vice versa, he said. "I'll have to become a salesman for Lawson at that point."

SIDELINED

Year 2000 concerns led the Maricopa Community College District, a Tempe, Ariz.-based group of 10 colleges with 100,000 students, to temporarily scale back its packaged software plans.

Maricopa this month began plotting a rollout of PeopleSoft, Inc.'s human resources software that is supposed to be completed by next July. And the Oracle Corp. financial applications it uses are due to be upgraded to year 2000 compliance this fall.

But those are centralized applications. Maricopa also looked at replacing the student information systems at each school with packaged software. But Ron Bleed, vice chancellor of information technologies, said that was vetoed because of the complexity of a wide rollout.

"Trying to install new software at 10 different colleges would probably have bumped us up too close to the year 2000 deadline," Bleed said.

Instead, Maricopa officials decided to fix up the homegrown systems and then look at going the packaged route when time isn't so short.

Year 2000-related projects have been cited as a big catalyst for sales of enterprise applications, which reached $14.4 billion in combined license and maintenance revenue last year, according to International Data Corp. in Framingham, Mass.

But users now are having to look closely at their systems and make tough calls on what feasibly can be done with packaged software, said Steve Bonadio, an analyst at Hurwitz Group, Inc. in Framingham, Mass. "This is creating an interesting quandary for companies," he said. "It's a real balancing act."

And what looks like 18 months to finish a project may actually be a year at best for manufacturers that sell products under long-term contracts that will start extending into 2000 early next year, said Bobby Cameron, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"If those people aren't in production [with packaged applications] by the first or second quarter of 1999, they're in trouble," he said.

Louisiana-Pacific Corp., a $2.5 billion maker of building products in Portland, Ore., is trying to finish up a year 2000-related implementation of Lawson's financial and human resources applications by January. To help meet the deadline, the company is "really going to do our best to avoid making major changes" to the software, said Jeff Duncan, IT director at Louisiana-Pacific.□

SQUEEZE PLAY

How to install packaged applications before 2000:

- Limit plans to customize the software
- Change your business processes to fit the technology
- Use rapid deployment schemes from vendors
- Mix packaged software with year 2000 fixes on current applications
- Do partial rollouts backed up by manual error checks and workarounds

Disney to launch Web portal

By Sharon Machlis

THE WALT DISNEY CO. is moving into the white-hot Internet portal space, teaming with Infoseek Corp. in a stock deal worth about $472 million.

"This is our portal play," said Jake Winebaum, chairman of Disney's Buena Vista Internet Group. "We plan to get behind it with all our assets, not just our online assets. . . . The Internet is mission-critical to The Walt Disney Co."

INTERNET ALLIANCES

Portals, one-stop information and entertainment sites where consumers can launch their Web surfing expeditions, are becoming increasingly important as they grab higher shares of the World Wide Web audience. Three of the top five most heavily trafficked Web sites in May, according to RelevantKnowledge, Inc. in Atlanta — yahoo.com (1), aol.com (2) and excite.com (5) — were portals, and another, netscape.com (3), is moving to become one. Infoseek was ranked seventh.

MORE COMPETITION

Disney, Infoseek and Starwave Corp. will be joining forces to launch a new Web portal later this year, officials announced. Disney already has budgeted $50 million to promote the new site next year. Starwave, in Bellevue, Wash., is an Internet technology company that produces ESPN.com, ABCNews.com and official National Football League and National Basketball Association sites, among others.

The new portal is likely to pull together Disney's popular online children's offerings with the news and sports offerings along with Infoseek's search and directory capabilities.

The recent, intense interest in portals is coming as Web demographics are changing, said Chris Charron, an analyst at Forrester Research, Inc. in Cambridge, Mass. "[Conventional media companies] realize the Internet audience is becoming more and more representative of the general population," he said. "For them, it's important to not only reach a new audience, but leverage their content."

For Internet-only portal companies, meanwhile, it is expensive to develop sophisticated content without the deep pockets — and capabilities — of an outside partner.

"Media companies realize that this medium will matter and are really upping their investment and involvement in the space," Charron said. "The last week has really been important for the Internet as a medium and the portal space in particular."

There has been intense speculation on Wall Street about other possible partnerships, and Charron said he expects more big deals in the next month.

Under terms of the deal, Disney will receive 25.8 million shares of Infoseek stock and warrants that could allow it to acquire majority ownership, while Infoseek gets an ownership position in Starwave and $70 million.

Infoseek also agreed to buy $165 million of promotional support for the new joint portal site from Disney.□

SAP shoots beyond back-office realm

By Craig Stedman

AT ITS EUROPEAN user conference in Madrid this week, SAP AG is expected to detail plans to make it easier to tie third-party software to R/3.

But the spotlight also will shine on several upcoming companion products to R/3 that are aimed at broadening SAP's boardinghouse reach beyond the back-office realm it already dominates.

Sources said the German company will use Sapphire '98 to detail plans for an R/3 4.5 upgrade with more extensive interfaces for bolting on third-party software. Initial shipments are expected by year's end, the sources said.

At the same time, SAP is expected to show off promised data warehousing, sales force automation and advanced planning products being developed as adjuncts to its market-leading applications.

The attempt to plow new ground with those products is a must for SAP because user demand for packaged software is shifting away from its back-office stronghold, said Bobby Cameron, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Two years ago, more than half of enterprise application sales were driven by the basic processing needs of departments such as finance and human resources, Cameron said. But by 2000, those purchases should account for less than a third of sales as buyers switch their focus to uses such as supply-chain management and customer care, he added.

EXPANDING FUNCTIONS

Brother Industries Ltd. is an R/3 user that is moving from "just using the software to run [the] business to trying to use it to make business decisions," said Sam Cox, chief information officer at the company's U.S. subsidiary in Bartlett, Tenn.

The Japanese maker of printers, fax machines, typewriters and sewing machines wants to stay in tight formation with SAP instead of looking elsewhere for answers to its data warehousing and production planning needs.

"You could always find something that runs faster if you're a bit-twiddler," Cox said. "But our strategy is to stay as vanilla with SAP as possible. We don't want to create an atoll [of other products] around it."

Jim Shepherd, an analyst at AMR Research, Inc. in Boston, said he isn't looking for any grandiose new plans from SAP while it focuses on finishing the already-promised products and helping the thousands of users who are trying to install R/3.

R/3 itself isn't hurting for functionality, and SAP "has enough other things out there on the table that still need work," Shepherd said. "They need time to catch up, and their customers do, too."

Officials at SAP's U.S. unit in Philadelphia declined to comment on the Sapphire plans.□

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FAA examines aging radar

By Patrick Thibodeau

AGING EQUIPMENT may be taking its toll on the Federal Aviation Administration, which recently lost Air Force One and Air Force Two on radarscopes and is now facing charges that radar systems at its Boston Air Route Traffic Control Center frequently go blank or suffer complete outages.

Air traffic controllers at the facility, which is located in Nashua, N.H., handle high-altitude air traffic in a 165,000-square-mile area from Long Island, N.Y., to Maine. They said lack of technical staff and the age of the equipment have made systems unreliable.

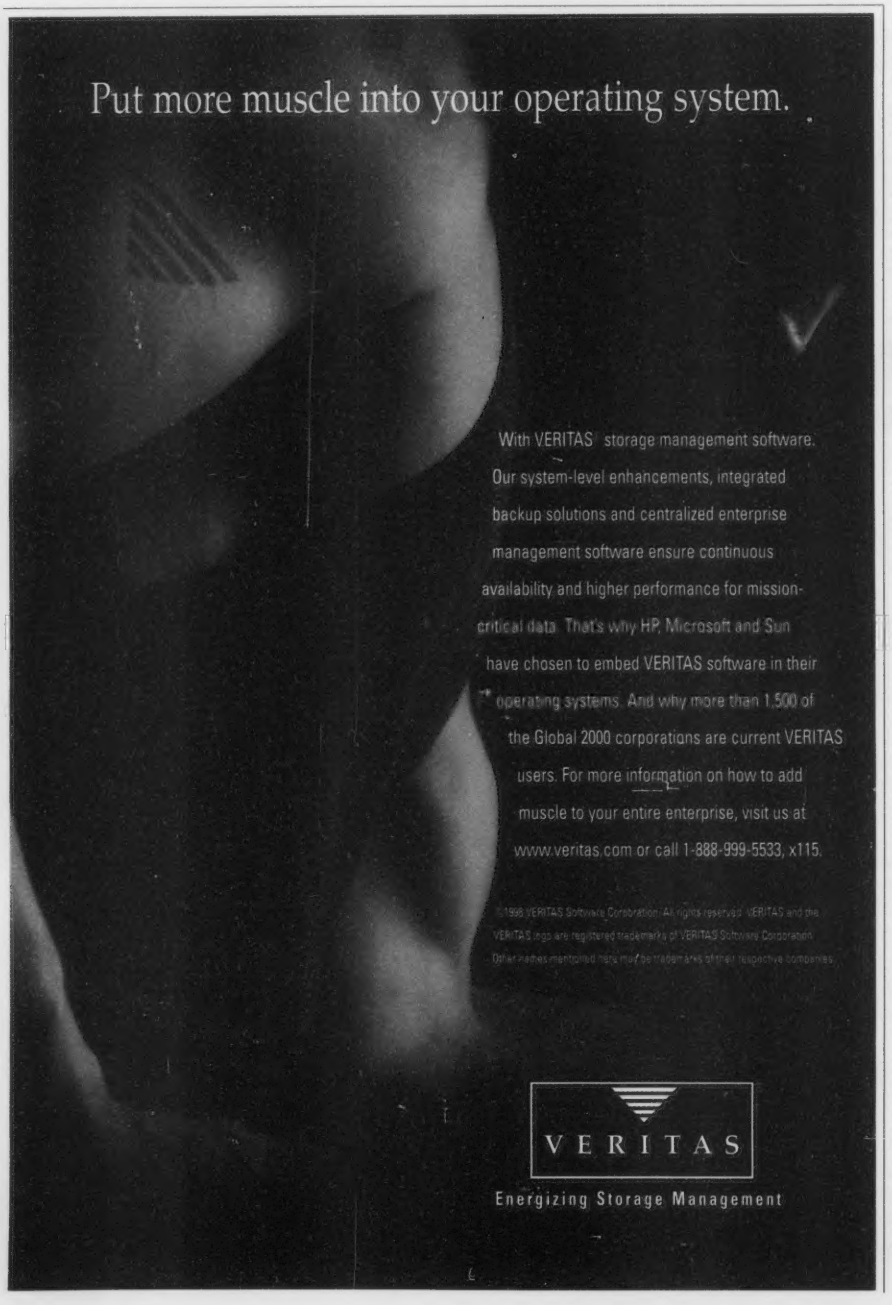
"It's like trying to run a car with 425,000 miles on it," said Mike Blake, a regional vice president at the National Air Traffic Controllers Association in Nashua.

Ed Dressell, president of the Professional Airways System Specialists, which represents technicians at the Boston center, said flight controllers experience frequent periods when radar screens freeze.

Often the freezes are short, measured in seconds. But when planes are spaced five miles apart and flying at 650 knots, in a few seconds, "you're almost there," Dressell said.

In May, systems froze 39 times, prompting the union to ask the FAA to declare an emergency at the center. The FAA rejected that step, Dressell said. Even so, the FAA took many of the steps an emergency would entail, such as authorization of overtime and work schedule changes to improve system maintenance, he said.

Although the FAA admits there are problems, it disagrees with the union as to the extent. Moreover, the FAA has taken steps to improve the reliability and availability of the Computer Display Channel, which translates radar data into a video display, according to spokesman Jim Peters. There won't be a permanent solution, however, until the Boston center's system is replaced in 2000, he said. □



UPS offers online delivery

By Sharon Machlis

UNITED PARCEL SERVICE of America, Inc. has formally launched its first delivery service "that does not require a motorized vehicle," the Atlanta-based company announced last week.

The UPS Document Exchange Internet delivery service, announced in March, is now available worldwide.

Other delivery organizations, including Federal Express Corp. and the U.S. Postal Service, declined to say whether they have similar systems planned.

Jim Harvey, an attorney at Alston & Bird in Atlanta, who has beta-tested the service, said it solves a major problem with E-mailing important documents: not being sure the recipient received them. With this service, the recipient gets a message with a World Wide Web site address and then visits the site. The file can then be viewed or saved to disk.

The documents use Adobe Systems, Inc.'s Portable Document Format (PDF), so they retain all the font, graphics and layout settings of a print document.

TWO OPTIONS AVAILABLE

UPS Document Exchange offers two options. One, OnLine Courier, allows users to send documents to anyone, regardless of their E-mail software. UPS provides real-time tracking, just as it does with physical packages.

The other, more secure OnLine Dossier uses double encryption and digital certificates for identity verification on both ends. UPS offers insurance in the event of a business loss due to an unauthorized user's access to a document.

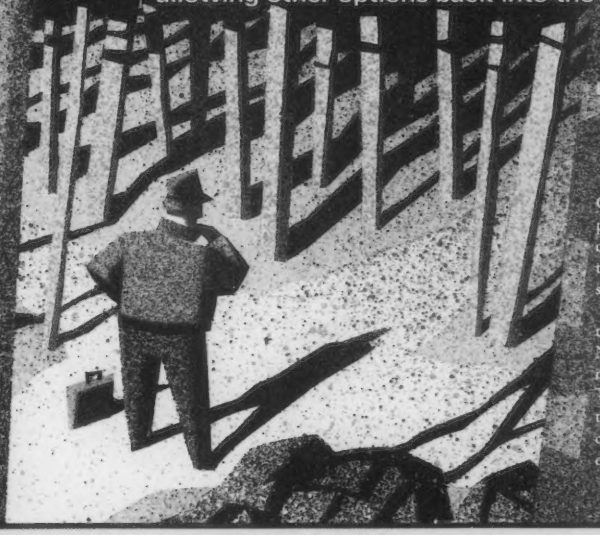
Rates range from $1 to $7 within North America and $1.50 to $12 overseas. □

FROM THE EDITORS OF
COMPUTERWORLD
VOLUME 3, NUMBER 6
JUNE 22, 1998
Intranets
A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

NETWORK OPERATING SYSTEMS

The Road Not Traveled

Until recently NT seemed like the obvious intranet route, but shipment delays and performance problems are allowing other options back into the picture



By Laura DiDio

Against all odds, conventional wisdom and Microsoft Corp.'s relentless marketing campaign, the mass migration to Windows NT Server as the foundation of the corporate intranet has stalled.

Instead of taking the road not traveled — or in this case, the NOS not tried, true and tested — many businesses are staying put. They're opting to build intranets that run mission-critical applications on their existing network operating systems like NetWare,

INSIDE ■ DODGING NT'S POTHOLES, PAGE 3 ■ NOS NOISE, PAGE 6 ■ RICH WITH NT, PAGE 7

NETWORK OPERATING SYSTEMS

Continued from page 1

Unix and yes, even the much maligned OS/2 Warp Server.

Users, whose future roadmap a scant year ago had signposts marked "All NT" have, in many cases, revamped their plans. Their reasoning is simple: The NOS they have in place now works fine and Windows NT 5.0's ship date grows ever more elusive (it's now expected sometime next spring).

"Hurry up and wait doesn't cut it. The market isn't standing still and neither are the demands of our end users and customers for better services, connectivity and applications," observes Thad Hymel, distributed systems manager at Hibernia National Bank in New Orleans, which has 5,000 users in 250 sites throughout Louisiana and Texas.

"Even if Microsoft's NT 5.0 and Active Directory were available now," Hymel reasons, "we'd still keep NetWare and Novell Directory Services (NDS) as our enterprise NOS. It's taken them six years, but Novell worked out the bugs and now has directories down to an exact science," Hymel says. In pragmatic terms, that means Hibernia can manage all 250 remote sites via NDS with fewer than 20 network administrators. "A wholesale switch to Windows NT would have meant tripling our administrative staff," Hymel says.

Ditto for Bill Peel, senior technical manager at the Bank of Montreal which has 6,000 users in 450 branches throughout Canada and remains committed to OS/2 Warp Server even though industry pundits have declared the operating system dead on numerous occasions. "We're keeping OS/2 Warp. It's here and it works," Peel says.

OS/2 Warp provides the Canadian bank with a solid, extremely stable intranet foundation. "With OS/2 Warp Server we achieve better than 99.5% availability and with its software distribution facilities we have only a 2% to 3% failure rate, which is much lower than the industry average of about 5% to 20% according to the Gartner Group," Peel says.

"WINDOWS NT 5.0 AND the Active Directory are still slideware, and users can't deploy promises."

JON OLTSIK, FORRESTER RESEARCH, INC.

To be fair, NT has its share of die-hard proponents. Those who prefer NT as their intranet server like its tight integration with Windows 95 and NT Workstation desktops, as well as with Microsoft Office and BackOffice suite of applications.

And many big shops have already made the switch from their legacy network operating systems to NT, believing that despite everything the future belongs to Microsoft. They include Dana Corp. and Nabisco, Inc. as well as several of the big Wall Street brokerage houses.

Moreover, Windows NT Server is the fastest growing network operating system over the last two years, according to just about every market research firm. And it shows no sign of abating (see chart page 6).

But what a difference a year makes.

Mike Kearney, vice president of information technology engineering at Phoenix Home Life Insurance Co. in Enfield, Conn., is a longtime NetWare shop that's been steadily installing Windows NT Server as an applications server. The firm was among scores of users seriously contemplating "going all NT as soon as 5.0 with the Active Directory (see May Intranet Series) shipped," Kearney says. But 'soon' turned into too late for the insurance firm.

"We asked ourselves, 'who has a solid, stable network operating system with support for Java and advanced directory services?' " The answer is NetWare. No way would we risk building our intranets on NT domain directories," Kearney says.

Though IS managers' faith in the NetWare platform is generally unflagging, the same isn't true of the way businesses viewed Novell's continued viability in the wake of a series of missteps that included bad acquisitions, wholesale management shakeups and shriveling sales. Novell's business prospects have improved in the last year under new company chief executive Eric Schmidt who has stabilized operations and succeeded in getting the company back on track delivering products. And the company's financials, while not spectacular, are once again showing growth. In its second fiscal quarter ended April 30, Novell earnings were up 35% to $19 million on sales of $262 million, beating Wall Street's expectations.

And the vagaries of the networking industry over the past 12 months have similarly caused many users to switch strategies and have prompted industry analysts to revise their forecasts of "NT everywhere."

Matt Rice, vice president and senior network manager at USTrust Bank in Cambridge, Mass., sums it up this way: "[Because NDS exists now in NetWare 4.x,] there's just no compelling reason for us to install Windows NT 5.0 as an enterprise NOS. By the time it ships in 1999, we'll be running smack into the Year 2000 issue. Two headaches

ILLUSTRATIONS BY MARTY BRAUN

of such magnitude would be more than we could bear," Rice says.

Especially since USBank, which has nearly 100 branches, has already worked through all the pain of the first three releases of NDS which Rice recalls "were pretty ugly" in the early '90s. "I don't want to start all over again if I don't have to," he says.

Jerry Ryan, manager of network services at Children's Hospital of Pittsburgh concurs. He recalls the "rocky start and instability" of NDS in NetWare 4.0. "There was hell to pay for a year and a half until we got NetWare 4.11. For two months all we did was troubleshoot and hunt for objects that mysteriously disappeared and reappeared off the directory tree," Ryan says.

He says he tells any pro-NT 5.0 and Active Directory factions at the hospital that he wouldn't even consider it "until Version 6.0."

"Fortunately, Novell is starting to come back. And I'm glad for selfish reasons, since I don't want to rip out and replace NetWare," Ryan adds.

An ancillary issue is the U.S. Justice Department's and states' ongoing probe of Microsoft for antitrust violations. While that doesn't directly affect NT deployment — at least not yet — users and analysts feel that the distraction of what's sure to be a protracted lawsuit will force Microsoft to take its eye off the ball.

In the meantime, Microsoft's competitors have been getting back on track. They're readying new versions of their operating systems — due out well in advance of NT 5.0 — that already feature more advanced directory services, clustering capabilities and better scalability than Microsoft's oft-delayed offering (see story at right).

The Bank of Montreal's Peel, for example, notes that while Microsoft's Windows Terminal Server will only begin shipping this month the bank has been using OS/2 Warp Server's thin-client configuration for six years. "We've gotten tangible benefits for a long, long

Dodging NT's Potholes

For all its dominance of the desktop, promises of tight integration between its operating systems, application suite and NT Server, the Redmond, Wash., firm's nearly limitless R&D dollars and an ever-growing community of third-party developers, the Microsoft juggernaut has hit a few major potholes.

First and foremost, the next generation of Windows NT Server is going to be late, very late. Windows NT 5.0, by Microsoft's own admission, now won't ship until at least second quarter 1999. It was originally expected late last year.

Even stalwart Microsoft proponents like Stu Sjouwerman, vice president of SunBelt Software, Inc., which distributes Windows NT third-party applications, concedes that "we will not see 5.0 in production until the year 2000 or later." But from his perspective, NT 5.0's tardiness is not necessarily a bad thing because it gives businesses plenty of time to prepare.

> **"WITHOUT HIGH-LEVEL scalability and reliability, Windows NT cannot hope to displace Unix in data-intensive intranet environments."**
>
> **BOB SAKAKEENY, ABERDEEN GROUP**

"NT 5.0 is enormous; it's more than twice the size of the current 4.0 due to the inclusion of many additional modules. And it may be three times larger as I keep on hearing about extra pieces of software that are getting included, like the recent Hewlett-Packard Co. and Computer Associates International, Inc. (network systems management) code," Sjouwerman says.

Late code from Microsoft is almost de rigeur. But there are other complications as well.

The first generation of any network operating system or software package is normally rife with bugs. But NT's current 33 million lines of code — triple that of archrival NetWare 5.0 which is slated to ship in volume this summer — will mean a lot of debugging for users who are working with essentially an entirely rewritten version of the operating system.

On top of that Microsoft executives have publicly admitted what's been an open secret in the networking industry for the last 18 months: NT Server has scalability problems. Microsoft has struggled to get Windows NT to scale beyond the current eight processors. By contrast, major Unix vendors like Digital Equipment Corp., HP and Sun Microsystems, Inc. have for years sold Unix servers that easily scale to 64 processors. Without high-level scalability and reliability, Windows NT cannot hope to displace Unix in data-intensive intranet environments, noted Bob Sakakeeny, an analyst at Aberdeen Group, a Boston consultancy.

Aberdeen Group, in fact, recently conducted a series of 10 case studies that examined long-term intranet deployment plans of very large organizations and found that "more than half the businesses which included banks, brokerages and a leading telecommunications firm were forced to abandon plans to migrate from NetWare, Unix and OS/2 Warp Server to NT because of scalability, reliability problems and the lack of an enterprise directory," Sakakeeny says.

And as if that weren't enough, the first two beta versions of NT 5.0 and its Windows Terminal Server, a.k.a. Hydra, thin client have been beset with bugs.

Adding to users' and Microsoft's woes is the forthcoming Year 2000 issue. Few are brave enough to want to tackle a new operating system with the Year 2000 date and time situation just months away.

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SOLUTIONS

Continued from page 3

time. For instance, we only have to designate a single network administrator to manage 250 PCs," Peel says.

For staunch IBM OS/2 Warp Server loyalists weary of constantly justifying their continued use of the operating system and the dearth of third-party applications for the platform, the availability of Java applications holds incredible allure. Once Java applications begin shipping en masse, it will make the issue of the underlying network operating system a moot point.

Novell has also improved its core NDS database with new features like Catalog Services, which lets network managers create lightweight indexes of directory objects and attributes. The end result is faster, more efficient directory searches. The latest version of NDS also includes a WAN Traffic Manager to enable administrators to define cost-based WAN connections and policies and support for LDAP Version 3.0.

Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass., says such leading-edge features in NDS as automatic software distribution and updates and tree pruning are arriving just when users really need them. They're also helping to recast Novell's image as a "legacy file and print network operating system."

"NDS and NDS for NT work and they're here now. Windows NT 5.0 and the Active Directory are still slideware, and users can't deploy promises," Oltsik says. The real test though, he says, will come when Novell delivers the native version of NDS for NT sometime in the second half of this year. That standalone product, which won't require users to run NetWare, may represent Novell's best chance to leverage NDS as a service to and well beyond the installed base of NetWare customers, Oltsik says.

USTrust Bank is a case in point. Rice says he was able to quantify to management that 30% of the calls to USTrust's help desk are related to password synchronization problems. This will be resolved by native NDS for NT. "I told my bosses it presently takes 20 minutes to fix that problem and we have 2,000 users. Native NDS for NT will eliminate it entirely," Rice says.

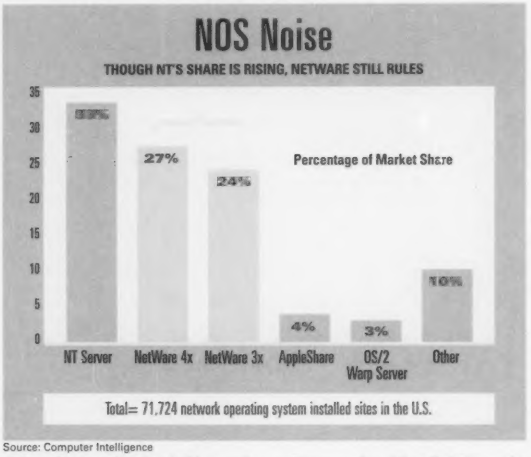
Still, there is no denying the impressive gains racked up by NT Server over the last 18 months — some of it in entirely new installations and some of it at the expense of competitors. And users acknowledge that Windows NT Server is the network operating system of choice when deployed as a departmental applications server.

An IS manager at one of the nation's largest brokerages that made a wholesale switch to NT in 1997, and who requested anonymity, said he's been "very pleased with NT's performance and reliability." The brokerage has sidestepped the management problems and myriad trust relationships associated with creating multiple domain directories by creating a single master domain to manage its entire enterprise.

"It works fine, we haven't had any problems, and Microsoft has more than kept its promises to us. From our vantage point, we wanted to move beyond NetWare's legacy file and print. Applications are the most important thing to us and nobody handles applications better than NT," the IS manager says.

But the intranet platform of choice for the masses, it is NOT — at least not until Windows NT 5.0 ships in 1999.

Phil Easter, technology strategist at Greyhound Lines, Inc. in Dallas sums up the feelings of many users who have decided to stick with NetWare: "There's no business benefit to switching to NT. If I were to rely on NT to get me to the Promised Land I'd be wandering around in the desert waiting for Microsoft to get its act together for another four years — way beyond the millennium."



Source: Computer Intelligence

DiDio is *Computerworld*'s senior editor, security and network operating systems.

ONLINE EXCLUSIVE

Intranets are not immune to Y2K bugs. For an Rx, point your browser to

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PROJECT: RICH PRODUCTS CORP.

NT Not Too Rich For Frozen Food Maker

By Steve Alexander

An initial intranet being installed at Rich Products Corp., a $1 billion privately-held frozen food company in Buffalo, N.Y., is expected to save $100,000 or more annually by automating business applications and improving communications. By year's end, the intranet will be rolled out to 1,200 to 1,500 workers, about 20% of the firm's work force. Though Unix was considered, the company went with Windows NT as the underlying operating system to complement its investment in Windows desktops and to leverage earlier availability of application development tools for its Oracle enterprise database. Mike Crowley, a Rich Products vice president and chief information officer, explains the project.

WHAT THEY'RE DOING

The three key business applications on our intranet are comparative sales reporting, order status and a nutritional information directory.

The next 12 applications are publishing-type applications, and rather than prioritizing them, we decided we would just do them all in about 90 days.

The intranet has been up for about 120 people in our information systems department for about a month, and we are rolling it out to three more departments and another 50 people this month. Rollout to the rest of the company will begin within two months.

HOW THEY'RE DOING IT

Comparative sales reporting replaces a number of applications used today to generate printed sales analysis reports that go to our people in the field. But invariably these printed reports arrive too late to be of major value. The intranet application would give us the ability to do the analysis, then publish it to a Web site. The order status application would go to our brokers or independent salespeople. It would allow the broker to avoid making calls to our help desk and customer service department to find out the status of an order or shipping dates.

Because we are a food manufacturer (selling primarily to restaurants through brokers), we would publish to the Web site our nutritional information in conformance with regulatory requirements. This would get rid of all the paperwork, and customers, brokers and food distributors would have a much better source of information that's always current.

The intranet also gives us a chance to have standardized sales presentations that are made available to all salespeople. It would be like a Microsoft PowerPoint presentation; you could just download it, or hook up to the Web while you're in a customer's office and look at it.

BENEFITS

It's very hard to quantify the benefits of getting comparative sales analysis information to salespeople more quickly, but we think it could be worth $50,000 to $100,000 annually. The nutritional information might be worth $15,000 to $30,000 annually in saved phone calls. We think there's an even bigger payback for the order status application, but we don't have a good estimate.

WHAT'S ONLINE

For an expanded view of this project with RealAudio clips, point your browser to
www.computerworld.com/intranets

COSTS

The 15 applications, plus what we've spent already, will cost a total of $100,000 to $150,000. We believe we can recoup that, and maybe more, with the intranet.

TECHNICAL CHALLENGES

In the long run, we'll have certain applications that will be more appropriate for the management group and others that will be of more interest to the hourly workers. We'll need some type of security system to control access, but we've not made those choices yet.

"The intranet would give us the ability to do the [sales] analysis, then publish it to a Web site."

MIKE CROWLEY
VP and CIO
Rich Products Corp.

TOOLS

We used Oracle Developer 2000 and the Microsoft suite of tools for NT Server.

ADVICE TO OTHERS

One of the dangers is overanalyzing the many development tools available. Intranet technology is relatively inexpensive, so it's practical to learn by doing. Just get your feet wet and learn it on the fly.

Alexander is a freelance writer in Edina, Minn.

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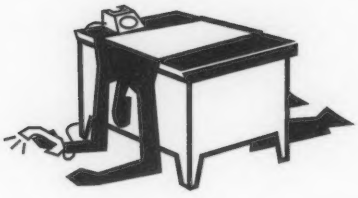

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FRANKLY SPEAKING

Getting the business

FRANK HAYES

AT STANDARD INSURANCE CO., IS staffers are using imaging technology — but not with the vision of a paperless office in mind. They're looking to create a paperless *basement*.

The Portland, Ore.-based company is growing so fast, paper records have filled up every nook and cranny of available storage space. The paper burden is increasing by 35% per year. And all that paper means there's no space to put the new employees the company needs to handle all the new business that's generating all that paper.

So what's driving Standard's decision to start scanning documents, running them through an OCR system and then shredding them? Sure, the technology is better and cheaper than ever, and work will get done faster because information is at users' fingertips.

But a key factor is the cost of basement storage space that can now be turned back into offices. That paperless basement is what seals the deal.

Think that's weird? Get used to it. More and more, it's going to be factors that are outside either technology or the overall business process that will make the difference between seeing a budget OK for your most visionary technology projects — or just letting them remain visions.

It's time to widen your expertise – and your field of view.

Maybe it's the cost of office space. Maybe it's the office space itself: A couple years ago, the Georgia Department of Vital Records finally got approval for a new imaging system when engineers realized the floor of the department's new office space literally couldn't support the weight of its tons of paperwork.

Maybe it's government regulation, such as the Federal Reserve's edict that mortgage transactions must be done electronically. That means mortgage banks, appraisal companies and other real estate businesses are scrambling to convert paper-based systems to bits and bytes.

Or maybe it's a tight job market that makes it hard to hire enough clerks to handle all those files. That's pushing companies in every industry to take another hard look at imaging.

Those things are outside what you'd usually think of as business process improvement issues — and they're way off your technology radar screen. But make no mistake: These "externals" are exactly the things you need to start paying attention to.

Why? Because just as a glitzy technology pitch will no longer wow the budget masters, fancy claims of business process improvement are losing their selling power, too. It isn't merely that companies won't buy technology without a thorough business analysis. Even *with* that analysis, many managers won't loosen the purse strings.

They've heard that "business advantage" line too many times. That's not enough now. They don't want to hear about an advantage, they want to see a victory.

That means it's time again to widen your expertise — and your field of view. Start looking at your organization as a business, not just a customer for information technology projects.

Don't just pray for a productivity payback. Look for hard costs, and start thinking about how to use technology to cut them. Track the business trends in your industry — not just the current IT fads — and watch for ways to get a jump ahead using technology.

Most of all, take a hard look at yourself. It's not enough anymore for you to be in the technology business, or even in the business-process-improvement business. You'd better be in the insurance business or the grocery business or the manufacturing or transportation or pharmaceutical business — whatever business your company is in.

Because if you don't see yourself that way, you're not likely to see anything you really need to see at all. □

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes @cw.com.*

SHORTS

Internet tax bill advances

The Internet Tax Freedom Act could come before the full U.S. House of Representatives as early as this week after being approved last week by the House Judiciary Committee, according to Rep. Christopher Cox (R-Calif.), who introduced the measure. It would then need approval by the U.S. Senate. The bill would impose a three-year moratorium on new state and local Internet taxes while a commission hammers out how best to deal with taxes in the digital world.

Lucent sues Cisco over patents

Lucent Technologies, Inc. in Murray Hill, N.J., late last week filed a patent infringement lawsuit against Cisco Systems, Inc. The suit comes at a time when Lucent is invading Cisco's data networking turf. Lucent charged San Jose, Calif.-based Cisco with infringing on eight Lucent patents related to routers, frame-relay network equipment and Asynchronous Transfer Mode equipment. Lucent is seeking unspecified damages and an injunction against future use of the technologies. "We are very disappointed by these claims," a Cisco spokeswoman said.

AOL seeks telecom allies

America Online, Inc. in Reston, Va., last week said it is "eager to establish alliances with a wide range of telecommunications, media and technology companies." But AOL dismissed as rumor that it is considering a marketing and technology alliance with AT&T Corp. AT&T wouldn't comment, but analysts said it could use the AOL portal to the World Wide Web to steer AOL's 12 million customers to AT&T's phone network and products.

Chevron outsources to EDS

Chevron Corp., the San Francisco-based petroleum giant, has reached a five-year, $400 million deal with Electronic Data Systems Corp. to provide mainframe, voice and data network services and information technology support. Under the outsourcing contract, more than 260 Chevron IT staffers will move to EDS and partner GTE Corp.

Oracle profits up, apps flat

Oracle Corp. last week reported a fiscal fourth-quarter profit of $402.8 million, exceeding Wall Street estimates. Revenue in the three months ended May 31 rose 24%, to $2.4 billion. But software sales went up only 10%, to $1.2 billion, as Oracle's applications business was flat year-to-year. Oracle executives told financial analysts that applications are now the company's top priority.

CONTRACT OF THE WEEK

Customer: Chiron Corp., Emeryville, Calif.

Prime contractor: IBM

Terms: $139 million, 10 years

Highlights: Outsources information technology operations to IBM, while Chiron implements an SAP AG R/3 enterprise system and focuses on biotechnology discoveries. IBM will build a companywide network and help desk and establish IBM workstations as the desktop standard. Chiron will collaborate with IBM Research on advanced technologies for life sciences.

Tough week for hardware makers

Falling memory prices took their toll on two chip manufacturers last week. Texas Instruments, Inc. said it will sell off its memory-chip business to Micron Technology, Inc. and cut 3,500 jobs. Prices are low due to a chip glut. Citing similar reasons, the Bosie, Idaho-based Micron reported a third-quarter loss of $106 million on sales of $610 million. Separately, Roy, Utah-based portable storage vendor Iomega Corp. said it expects a net loss of $25 million to $35 million for the quarter ending June 27. The company said it will shed 600 to 700 employees. And Sequent Computer Systems, Inc. in Beaverton, Ore., last week warned investors that it expects to lose $185 million to $195 million in its second fiscal quarter and will eliminate 200 to 250 jobs worldwide.

SHORT TAKES Micro Focus Group PLC, a U.K.-based vendor of application development software for mainframe users, announced it will acquire Rockville, Md.-based Intersolv, Inc. in a $534 million stock swap. . . . Cisco Systems began replacing about 1,100 MicroSwitch 10/100 systems that had a problem that could cause electrical shock or fire.. . . . Customs officials in eastern Germany nabbed 2,400 illegal copies of Microsoft Corp. software worth $1.87 million after a routine highway check during which officials found pirated copies of Office 97 in the back of a car. . . . IBM last week announced the launch of its Center for Java Technology, a compatibility testing center staffed by 85 in Cupertino, Calif. . . . IBM next month will ship its WebSphere Application Server, which will have Apache's freely distributed Web server software bundled and supported with the product.

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Women in high tech opt more and more to run own business

By Laura DiDio

MORE AND MORE, women in information technology positions are opting out of the traditional corporate career path and striking out on their own.

That is a hot subject at this week's annual Women in Technology International (WITI) conference in Santa Clara, Calif. Participants will discuss how to succeed in their own businesses, as well as in traditional companies.

Starting their own businesses is an attractive option because the failure rate of new female-owned businesses is half that of all new businesses: 39% vs. 80%, according to WITI.

Take, for example, Sonia Khademi, founder and CEO of CableSoft Corp., a 3-year-old software company in Burlington, Mass.

CableSoft CEO Sonia Khademi: **"I wanted to set my own rules and not play the Fortune 500 games"**

Khademi, who has an engineering degree, left a position as a regional sales manager at Cisco Systems, Inc.'s offices in Waltham, Mass., because she felt she had "no hope" of making the internetworking giant's executive team. "I didn't see a lot of women at the top in Cisco," she said.

WOMEN IN TECHNOLOGY INTERNATIONAL

So Khademi founded her own company "to break the mold. ... I wanted to set my own rules and not play the Fortune 500 games."

She soon faced new challenges. "I had a credibility issue right away in raising money. The venture capitalists grilled me on my business acumen and tested my knowledge of technology in the first meeting," Khademi said. She passed, and after five months, she raised $1.3 million.

Then there is Josette Rigsby. "I quit a job because one of my former bosses asked me to get him a cup of coffee," said Rigsby, formerly a webmaster for the city of Richardson, Texas.

She now runs her own World Wide Web development firm, Boynick & Rigsby, Inc. "Starting my own firm was the best thing I ever did," she said. "I'm glad to see more women doing it."

Some women find that the shortage of skilled information technology professionals helps them jump ship to better environments.

One woman IS manager, who requested anonymity, left her job as network administrator at a mid-Atlantic manufacturing company after being passed over three times for a promotion — twice in favor of male subordinates she had trained.

She is now an IS manager at an East Coast Fortune 1,000 company. "I got several good offers right away. I inflated my salary by 30% and asked for another 15% pay hike over that, plus a sign-on bonus, because that's what all my male co-workers were doing. And I got it," she said.

FIGHT IT OUT

But some women decide to stay and fight.

Margo Mao, a program manager for strategic business applications at IBM in Somers, N.Y., is one of those women.

She proved her mettle as MIS director at IBM's Tokyo headquarters, managing 200 Japanese men in the early 1980s. Women were a rarity in the Japanese workplace then, and most held low-level jobs.

To sidestep sexism, Mao designated one MIS manager to be her direct report and funneled all instructions through him. "That made it easier for the 200 male workers to take," she said.

And Mao delivered all her instructions in English. "Japanese women use a different vocabulary, [one] that's subordinate, when speaking to male co-workers. There's no such thing in English."

Nearly 20 years later, Mao is still at IBM and said things have improved vastly for women. "There are still issues, but smart women can circumvent them," she said. □

Hurdles for women in IT

- Women in computing, science and engineering earn 12% to 15% less than male colleagues and are twice as likely to leave the profession as men.[1]
- Percentage of women who say they have an equal chance at becoming their employer's CEO: 29%[2]
- More women (46%) are dissatisfied than men (31%) with career opportunities in IS.[3]
- Fewer women are getting bachelor's degrees in computer science: 28.4% in 1995 vs. a peak of 37.1% in 1984.[4]
- Women seem to be more successful when they run their own businesses: Only 39% fail in the first year vs. 80% of business overall.[5]

Sources: (1) 1996 U.S. National Research Council report; (2) 1997 Women in Technology International (WITI) conference; (3) 1998 *Computerworld* survey of 562 people in IS positions; (4) U.S. Department of Education, Washington; (5) 1998 WITI conference report

Users hope Nortel boosts Bay

CONTINUED FROM PAGE 1

tional change planned is the addition of 200 salespeople to Bay's current 3,000.

Nortel's financial strength and resources could be just the medicine for long-struggling Bay and its customers.

The deal would give Nortel about 80,000 employees in 150 countries. Nortel is known for huge research and development investments: A quarter of its staff works on R&D, and its R&D budget was $2.1 billion last year — $99 million more than Bay's 1997 revenue — out of total revenue of $15.5 billion.

"This deal solidifies our confidence level in Bay's long-term future because it means more capital will be available [to Bay], and engineering and development will be accelerated," said Chris Horrocks, chief information officer at debt collector Commercial Financial Services, Inc. in Tulsa, Okla. The company has bought $5 million in Bay products since the mid 1990s.

"What I expect to come out of this deal is for deep-pocketed Nortel to fund Bay's research and development kitty," said John Morency, a vice president at Renaissance Worldwide, Inc., a Newton, Mass., consulting and research firm.

Bay has "a few products in hot markets and needs to build on that. Bay users want to see the capabilities of their products extended," he said. Morency said Bay needs follow-on development for some campus switching products, additional systems that perform multiple types of switching and improvements to its Optivity network management system.

"The Nortel deal represents an infusion of capital that Bay needs to stay afloat," said Bill Horst, network manager at the U.S. General Services Administration in Boston, another longtime Bay customer. "This should give Bay a lot more capital to work with for things like developing voice-over-IP products and network management. But [Bay] needs to show it can do this quickly because if the products take too long to come out, users will go elsewhere."

Bay, created by the 1994 merger between Wellfleet Communications, Inc. and SynOptics, Inc., suffered from infighting among executive management, product management and marketing staffs until about a year ago. Recalling that period, some users raised concerns about how things will work with an already bicoastal Bay being bought by Toronto-based Nortel.

"I'm worried about the upheaval that could occur after the deal is done," said Earl Perkins, telecommunications manager at London Electricity, a utility in the U.K. "I'd hate to have to ride it out again, what with delayed orders, quality control suffering and service dipping." But the positives of the deal outweigh the negatives, he added.

Nortel is a conservative company, whereas Bay is the opposite, Morency said. That could slow Bay's ability to deliver products, he said. □

SHOPPING SPREE

Since it was formed by the merger of Wellfleet Communications and SynOptics Communications in October 1994, Bay Networks has bought several companies:

1995

- Centillion Networks, Inc. ($140M)
- Xylogics, Inc. ($330M)

1996

- Performance Technology ($13M)
- Armon Networking Ltd. ($33M)
- LANCity Corp. ($33M)
- Penril Datability's digital signal processing modem business ($124M)

1997

- NetICs, Inc. ($99M)
- Rapid City Communications ($155M)

1998

- New Oak Communications ($155M)
- Netsation Corp. ($11.6M)
- Netwave Technologies, Inc. ($10M)

Corel tries again with Java

By Carol Sliwa

BEST KNOWN for its PC graphics software, Corel Corp. in Ottawa last week announced the first licensee of its JBridge technology, the company's latest attempt to put Java to use in large firms.

Sybase Corp. didn't say what it will use JBridge to do. JBridge was designed to let users of network computers and Unix, Mac OS and 16-bit Windows systems run 32-bit Windows programs over the network using Java as a bridge. The systems must be Java-enabled, and JBridge must run on the Windows NT server and the client systems.

Microsoft Corp.'s Windows Terminal Server achieves a similar goal for Windows-based PCs. When used with Citrix Systems, Inc.'s MetaFrame product, it can extend the capability to Macintosh, Unix and other Java-based machines.

But Corel said its JBridge does more, letting firms customize software on the client side to boost performance. □

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Compaq unwraps postmerger plans

▸ *Multiple platforms, improved outreach goals*

By April Jacobs
NEW YORK

WITH THE Compaq/Digital merger a done deal, Compaq Computer Corp. last week laid out its plans for combining product lines and improving its online and direct-sales efforts. The reaction was mixed among users and analysts.

At PC Expo here last week, Houston-based Compaq announced the following strategic plans:

- It will merge the former Digital Equipment Corp. notebook, PC, workstation and server lines into a single product line under the Compaq brand name.
- It will provide professional services through a single organization. Compaq pledged to give large corporate accounts a single point of contact for sales and service for all products.
- It will allow customers to order some products online or directly through Compaq's sales force.
- It will offer customers the Golden Blanket transition program, which means continuing to support commitments for Digital products until customers have migrated to the Compaq line.

Analysts said there is a lot of uncertainty about whether the company can merge such a large product and service organization, given that it is also supporting high-end Tandem users. Compaq acquired fault-tolerant systems maker Tandem Computers, Inc. a year ago.

GOOD BLEND

But some users said they like the idea of having Digital's Alpha processor technology on Compaq's high-end workstations and servers.

The speedy processor is well-suited to workstation applications, and an increasing number of application vendors are porting to Alpha, said Gary Davis, president of Animation House, Inc, a longtime Digital workstation user in Evansville, Ind.

Davis said he has doubts about Compaq's long-term support for the chip, but he added that Animation House will continue buying Alpha systems from Compaq.

Other users said they were worried that Compaq will have a difficult time supporting so many platforms and organizations in light of its historical focus on desktop PCs and PC servers.

"The sad part is that, while I am a Compaq man, I think they have sunk to an all-time low," said Ash Shehata, chief information officer at Antelope Valley Healthcare, Inc. in Lancaster, Calif.

Compaq last week announced several steps in its plan to combine product lines

He said Antelope Valley Healthcare has already switched from Compaq to Dell Computer Corp. PCs and servers and has plans to move off its Tandem systems as well.

Shehata cited service problems and Compaq's tendency to use nonstandard PC components, such as network interface cards.

Amir Ahari, an analyst at Framingham, Mass.-based International Data Corp, predicted that Compaq will eventually "come out on top" by maintaining its broad support for such platforms as Alpha and Digital Unix, thereby keeping Digital's high-end customers.

"For users, there is always going to be some level of anxiousness, especially if they have invested heavily in the Digital road map," Ahari said. "They will either have to fit into Compaq's plan or look for somebody else." □

Senior editor Jaikumar Vijayan contributed to this report.

Windows 98 sales on slow ramp

▸ *Users see few benefits to upgrade, look to NT*

By April Jacobs

IT WILL TAKE more than a splashy June 25 introduction of Windows 98 to produce a flood of corporate orders for Microsoft's long-awaited operating system upgrade.

Sales are expected to ramp up slowly because PC makers plan to offer Windows 95 through next year and because users tend to avoid the first version of new operating systems.

Microsoft will release Windows 98 June 25

So although corporate users of Windows 95 say they are looking at Windows 98 for benefits and testing its seaworthiness, most are expected to stick with what they have until they are sure there is a reason to move to Windows 98.

That's because the upgrade doesn't offer corporate users nearly as many benefits as an upgrade from Windows 3.x to Windows 95 did two years ago, according to users and analysts.

"The way I see it, there isn't much of a difference between Windows 95 and Windows 98," said John Wohn, division manager at Hicksville, N.Y.-based Market Span, Inc. Wohn said his company will choose either Windows 95 or Windows NT for new desktops depending on the applications the machines will be running.

Several users, meanwhile, said they aren't worried about departmental defections to Windows 98, in part because users haven't been clamoring for it.

"We lock down our desktops to prevent any changes we don't want," said Ash Shehata, chief information officer at Antelope Valley Healthcare, Inc. in Lancaster, Calif. "The only way anyone is getting [Windows 98] in is if they have a gun," he joked.

Analysts said the new operating system will likely gain the most ground with users who accept it on new desktops.

PC makers said they also expect corporate adoption to be relatively slow, and at least one is taking the slow road in making plans for shipping Windows 98-loaded desktops.

Ken Bissell, spokesman for Round Rock, Texas-based Dell Computer Corp., said the company will begin shipping its line of corporate desktops with Windows 98 in the middle of next month. It will ship its consumer line this week. Houston-based Compaq Computer Corp. will ship its corporate PCs running Windows 98 this week. Both will offer Windows 95 for at least the next year.

Available on the day of announcement, pricing is $109 for a new license and $89 for an upgrade. Corporate volume discounts are also expected to apply. Windows 98 doesn't usually require a hardware upgrade for those running Windows 95, but users should have a Pentium-based machine, with at least 32M bytes of memory. □

CA extends Unicenter reach, manageability

By Patrick Dryden

COMPUTER ASSOCIATES International, Inc. announced four enhancements to its Unicenter management software last week that extend the suite's reach.

Some enhancements give users new ways to run Unicenter remotely; others allow users to manage more kinds of devices and applications.

TIME LAPSE

But the technology is "embryonic," and its management functions "may not be mainstream" in client/server networks for another two or three years, said Jonathan Eunice, a management analyst at Illuminata, Inc. in Nashua, N.H.

Right now, most users are still struggling just to get the basics of enterprise management in place, he said.

The enhancements include the following:

- Support for Microsoft Corp.'s Windows CE operating system in handheld devices and embedded systems. That will let users both manage handheld devices and use them on the network to access the Unicenter console.
- CA and PageNet, Inc. in Plano, Texas, will develop wireless remote access to Unicenter to allow roaming users to receive alert messages on a pager and respond with commands to fix a problem.
- Unicenter will add the Data Transport Option (DTO) software designed to make information exchanges with remote users or branch offices more manageable. DTO provides hooks to help manage connections, security features and data compression.
- Taking advantage of DTO will be a package called Enterprise/Remote Site Management, software designed to collect and update data that is located in field offices, retail outlets and mobile PCs. It helps extend Unicenter to manage end points such as point-of-sale terminals, teller machines and devices other than servers and desktops. □

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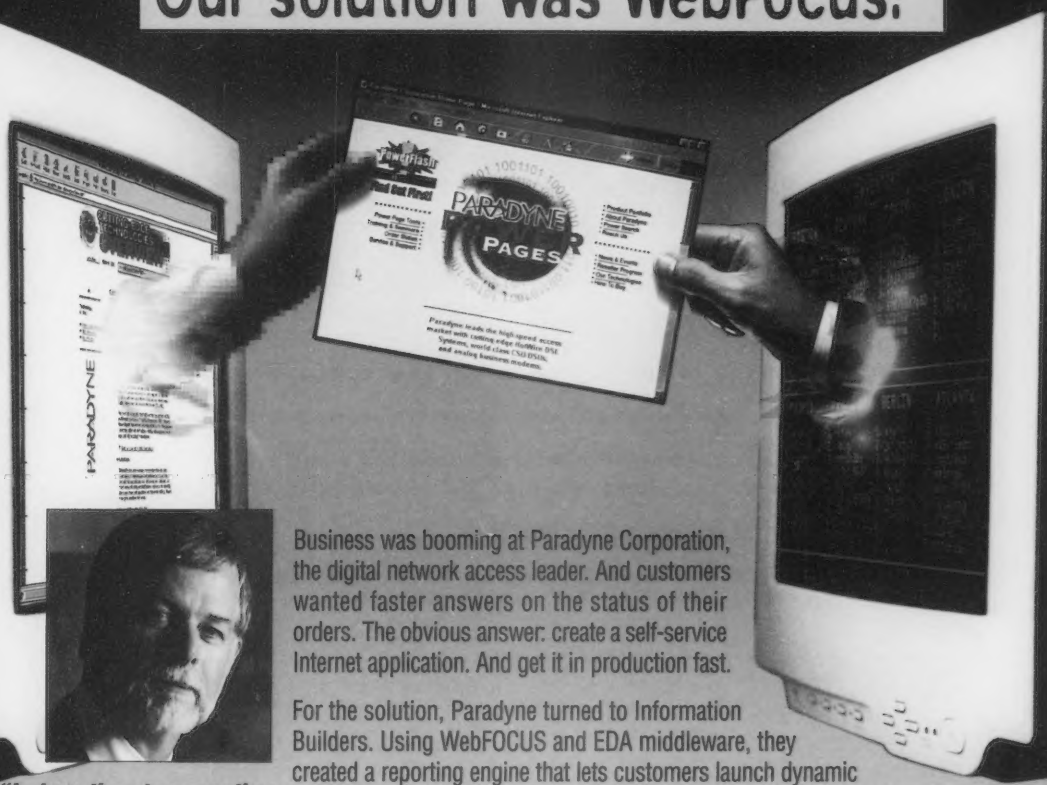

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HP, Xerox trading lawsuits, barbs

By Roberta Fusaro

THE HEARING dates are still pending, but it looks as if Xerox Corp. and Hewlett-Packard Co. are headed for court. Again.

Palo Alto, Calif.-based HP on May 27 filed a patent-infringement suit against Xerox that charges the company with using HP's protected touch-screen technology in Xerox's Document Centre copiers and in several other Xerox products (see chart). It is the second time HP has sued Xerox within the past nine months.

The two rival manufacturers, seeking dominance in the printer/copier market, have been engaged in a battle of the plaintiffs: They have filed three patent-infringement lawsuits against each other in the past year.

HP said the technology and products at issue in the most recent court action represent more than $800 million in annual revenue for Stamford, Conn.-based Xerox. The company is seeking unspecified financial damages and wants Xerox to stop selling and producing the black-and-white and color copiers at issue.

Xerox spokesman Judd Everhart said the company is reviewing HP's complaint, but he wouldn't speculate about HP's motives for filing the lawsuit. "But coincidentally, [$800 million] was our estimate from products we cited in our lawsuit," Everhart said, referring to a lawsuit Xerox filed against HP in Rochester, N.Y., on May 14. In that complaint, Xerox said HP used patented Xerox technology in some of its ink-jet printers.

Jeremy James, a spokesman at HP, said the company doesn't believe it has infringed upon patented Xerox technology. He also said HP believes the Xerox patent in question, which covers printhead technology and which was issued in 1991, is no longer valid.

COPYCATS

HP targeted these Xerox products in its patent-infringement suit:

- Document Centre copiers (220, 230 and 265)
- Xerox copiers (5799, 5800 and 5855)
- Docucolor 40 copier

Xerox targeted these HP products in its patent-infringement suit:

- DeskJet (10 different models and color cartridges)
- PhotoSmart Photo Printer
- Color Copiers (110 and 120)
- Office Jet Pro (1150C, 1170C and 1175C)

LEADERSHIP SQUABBLE

Geoffrey Bock, a senior consultant at Patricia Seybold Group in Boston, said such lawsuits are typical in an area where each company wants to be seen as the technology leader. "So they place great emphasis on filing patents on their engineering inventions and defend them vigorously," he said.

James said it is too early to tell how the lawsuit would affect users of either company's products. But he said the impact will probably be minimal. "I think it will be a case of each party asserting its financial claims for use of the patents," he said. But the lawsuits aren't likely to prompt users to pull copiers and printers out of their offices, he said.

James said HP's most recent court action is a separate matter from Xerox's suit and another lawsuit HP filed against Xerox nine months ago. HP last September filed suit against Xerox alleging that the company's packaging of its Xerox LaserJet cartridge infringed upon an HP trademark. □

How to manage distributed apps without damage

▸ *Monitoring tools may slow performance*

By Patrick Dryden

IS MANAGERS walk a tightrope when they take responsibility for SAP AG R/3 and other distributed applications that run businesses.

They must load tools on servers to monitor availability and measure performance without getting in the way of business transactions. If they lose that balance, users suffer.

The same situation that information systems groups faced learning to manage mainframes and networks now endangers the health of critical business software, according to users, consultants and analysts. The issue also has received attention at recent user group meetings, including Computer Associates International, Inc.'s CA-World, Tivoli Systems, Inc.'s Planet Tivoli and Hewlett-Packard Co.'s OpenView Forum.

If too many management agents pile up or any tool tracks too much information, a server could waste precious power supporting its caretakers instead of its users. "We see this most often now with R/3 servers because the software is so vital yet so complicated," said Frank Henderson, chief technology officer at Netplex Group, Inc., a consultancy in McLean, Va.

NETWORK ALERT

System and application monitors can impact users by slowing networks, too. Polling servers across a network and running robot stations to simulate user activity both increase traffic. More management can mean less bandwidth for real work.

TUNING UP

Managers must tune the tools that watch underlying hardware and the server operating system, plus those added for the database and application modules.

At one site, Henderson said, a misconfigured R/3 diagnostic package chewed up 35% of CPU cycles, more than doubling the time needed to complete work.

Somewhere in the 3% to 5% range for management overhead is acceptable, "but a poorly written Unix script can choke a server with 10% utilization, and we ran across an R/3 accounts server wasting 20% of its power just monitoring the environment," said Steven Foote, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

BALANCING ACT

Performance management is "a constant balancing act" between frequency and amount when collecting data, said Sue Aldrich, an analyst at Patricia Seybold Group in Boston. "But it's easy to still impact the application you're trying to watch."

Management overhead totaled 15% on one server "when we first turned on all the tools" to monitor HP-UX, an Oracle Corp. database and SAP R/3, said David Bristow, manager of global enterprise management services at LSI Logic Corp. in Milpitas, Calif.

To reach a maximum utilization level of 5%, Bristow said, he categorized the hundreds of available parameters, then asked IS specialists and user representatives to rank the five most critical ones to monitor.

Besides judiciously selecting what to watch and how often, managers can seek intelligent agents — software that can work on its own, report only significant events and compress information to reduce the load on the server as well as network bandwidth.

Also, some performance monitors can run someplace other than the database or application server, removing at least one tool from the stack.

As a last resort, big customers can use brute force to get help from vendors.

When management overhead climbed too high during the SAP rollout at Lucent Technologies, IS managers "locked vendor engineers in a lab until they got tool utilization down to 4%," said Frank Hagmann, enterprise architecture project manager at Lucent in Murray Hills, N.J. □

MOREONLINE

For resource links including an SAP-related search engine, tutorials, resource centers, articles, books and more, visit *Computerworld online.*

www.computerworld.com/more

NetWare getting fast Java

By Laura DiDio

WHEN IT COMES to Java, speed counts.

That was the message Novell, Inc. and Intel Corp. delivered last week at PC Expo in New York when they announced they are partnering on a faster, more scalable version of the Java Virtual Machine (JVM) for the NetWare network operating system that uses Intel's 64-bit Merced chip.

Novell's new JVM, codenamed NetFire, was designed for users running NetWare on upcoming uniprocessor and multiprocessor servers based on Merced. After a six-month delay, Intel reported this month, Merced-based servers are expected to start shipping late next year [CW, June 8].

MERCED BOOST

Novell officials said NetFire uses the Merced's performance to speed up Java applications.

Applications written for standard JVMs will run on NetFire. Developers will be able to create applications for NetWare using standard Java technologies and tools.

Neil MacDonald, an analyst at Gartner Group, Inc. in Stamford, Conn., noted that while Java's potential ability to "write once, run anywhere" has huge appeal for users and independent software vendors, one of the main impediments to Java adoption thus far has been its less-than-stellar throughput.

SOUNDS GOOD

"The NetFire JVM sounds good," said Phil Easter, technology strategist at Greyhound Lines, Inc. in Dallas. "Anything [Novell and Intel] can do to further improve my ability to run Java in NetWare 5.0 will be put to good use in my organization."

So far though, Mike Reed, vice president of marketing at PlusFactor Software, Inc. in Portland, Ore., said he has been impressed with NetFire's performance in the early beta release, which he has been testing for more than a month. PlusFactor manufactures a Java-based application that lets businesses track routine administrative tasks. □

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1. See logo
4. Curtsy
7. Piece
8. Honest ___
9. Alias: abbr.
10. Tennis shot
11. Count on
15. Pair
16. NT - not!
21. Mister
22. Server need
23. Little bit
24. Dress edges
25. Stitch
26. Serious software

DOWN

1. For Pete's ___!
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4. ____ & chain
5. Clarinet's kin
6. Net subset
7. Golfer's goal
12. Give ____ rest!
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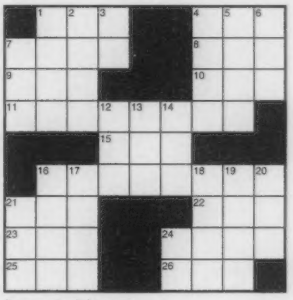

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Web appl

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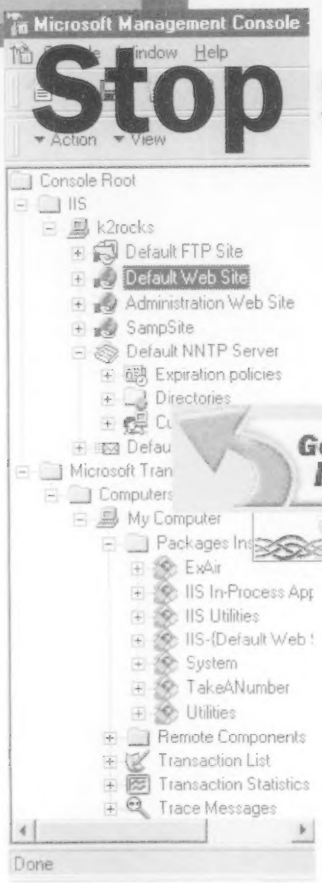

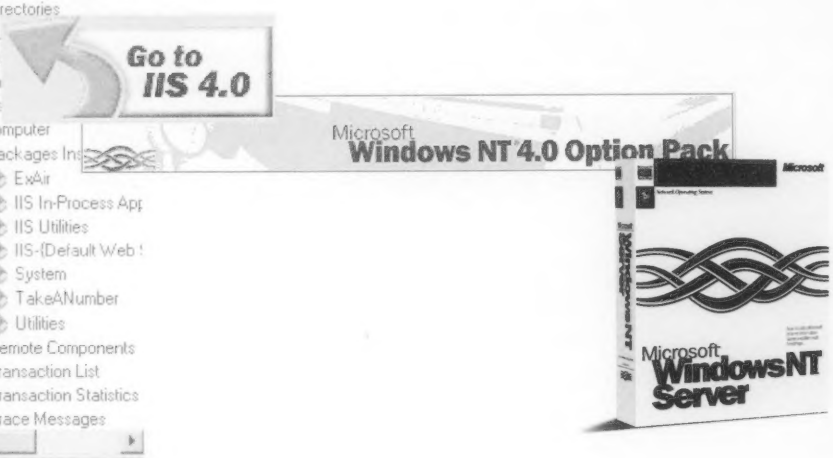

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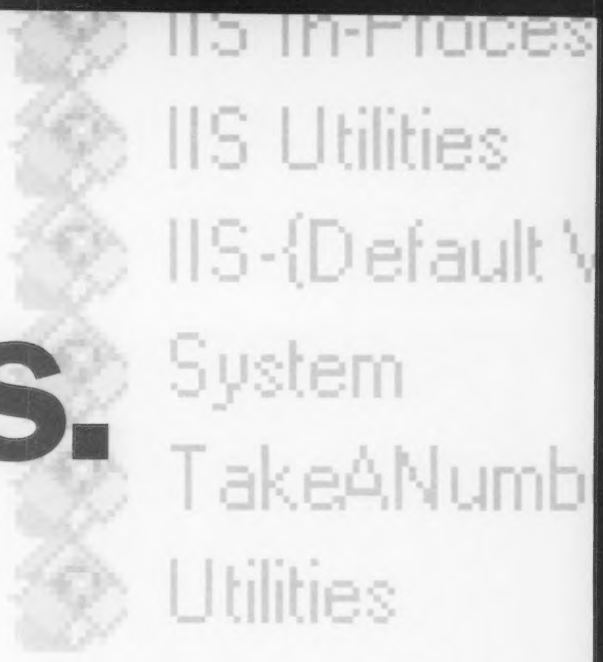

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NEWS

Microsoft ships its answer to the thin-client threat

By Sharon Gaudin and April Jacobs
NEW YORK

EARLY ADOPTERS this week will get their hands on Microsoft Corp.'s long-awaited Hydra thin client, now dubbed Windows Terminal Server.

The product ships immediately and is priced at $1,129 for the server addition, Microsoft officials said at last week's PC Expo trade show. Workstation licenses cost $269. Discount pricing — $627 for the server software and $238 for the workstation — is available to participants in the Microsoft open license program.

File and print capabilities are provided with an add-on from Microsoft that is priced at $39.95 per seat.

Windows Terminal Server, a version of Windows NT, was designed to run single-application environments, such as point-of-sale machines and kiosks. Much like its big brother, Windows NT Server, it uses a dumb terminal as a client.

Windows Terminal Server is also one of Microsoft's frontal attacks on the growing network computer trend that threatens to replace Windows-based desktops with Java-based environments.

Potential Hydra users were dismayed in April when Microsoft said it would hold off on developing some key features in Hydra so it could get it out the door. Those pared-off features include load balancing, local file and print sharing, and disk-drive sharing.

Microsoft is working on the next version of Windows Terminal Server, which product manager John Frederiksen said he expects will start beta testing this fall and ship with Windows NT 5.0 next year. That version of Windows Terminal Server should include some of the dropped features. But, Frederiksen cautioned, "We don't have finalized plans."

"Here is a tool that will allow IT managers to have some recentralization."

– Jean S. Bozman, International Data Corp.

Also at PC Expo, Microsoft pushed the concept of using Windows Terminal Server as a booster product for aging PCs. With it, users can access and process new applications by harnessing the power of the server and server-based applications, which would not be possible if processing had to be done locally on an older PC.

BIG SUPPORTERS

Vendors supporting Windows Terminal Server with complementary hardware and software products include the following: Compaq Computer Corp., Dell Computer Corp., Hewlett-Packard Co., IBM, Neoware Systems, Inc., Network Computing Devices, Inc. and Wyse Technology, Inc.

One analyst said Windows Terminal Server's release will carve out a toehold in Unix's corporate market. "This is a building block in [Microsoft's] plan to move more into the space occupied by Unix midrange servers," said Jean S. Bozman, a software analyst at International Data Corp. in Mountain View, Calif. "Here is a tool that will allow IT managers to have some recentralization. And with NT 5.0's greater scalability, this will move them right up into the Unix market."

Unix-based applications can be accessed using a third-party product called MetaFrame from Citrix Systems, Inc. in Fort Lauderdale, Fla. MetaFrame is an add-on for Windows Terminal Server.

MetaFrame also gives users access to Macintosh-based applications and provides client-side load balancing. □

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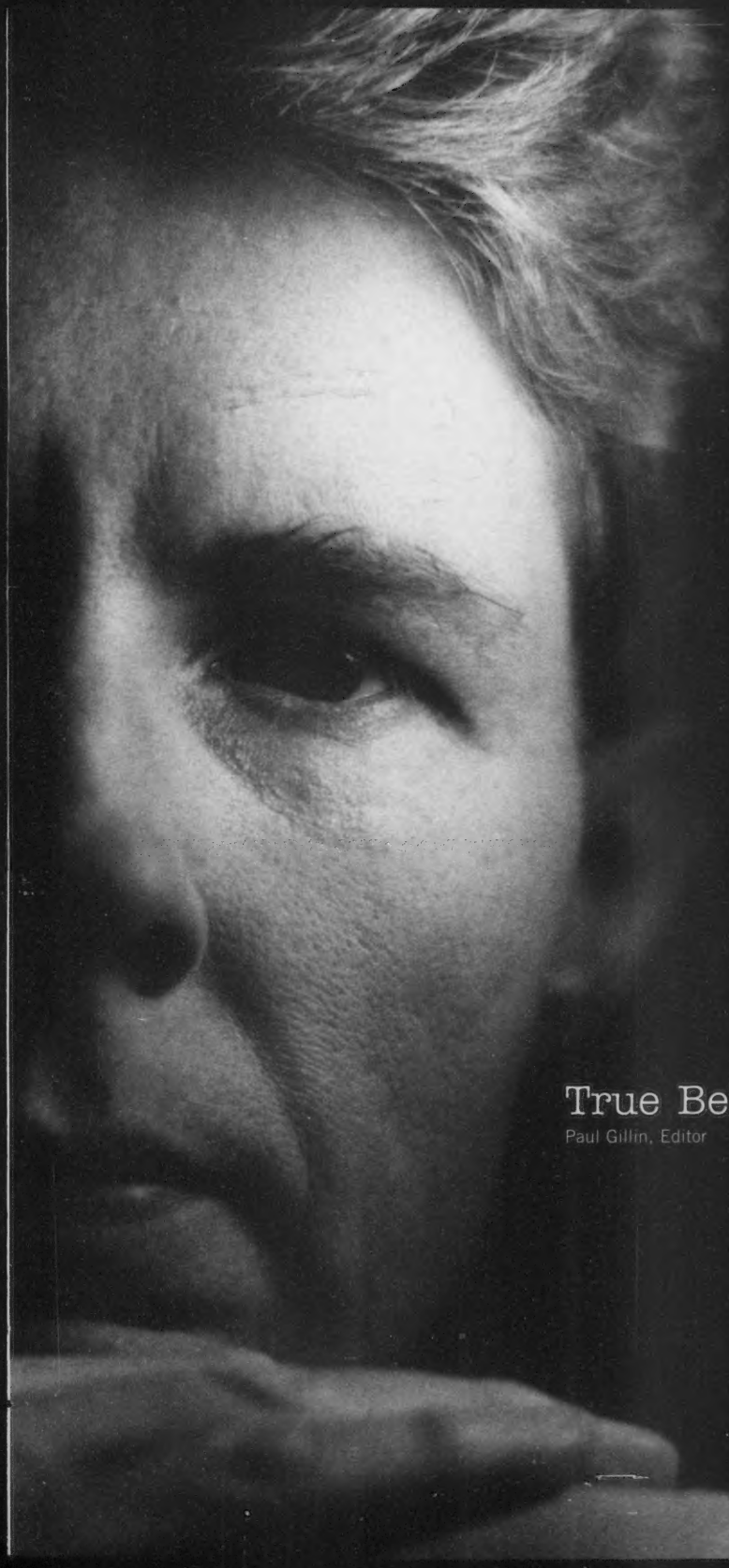

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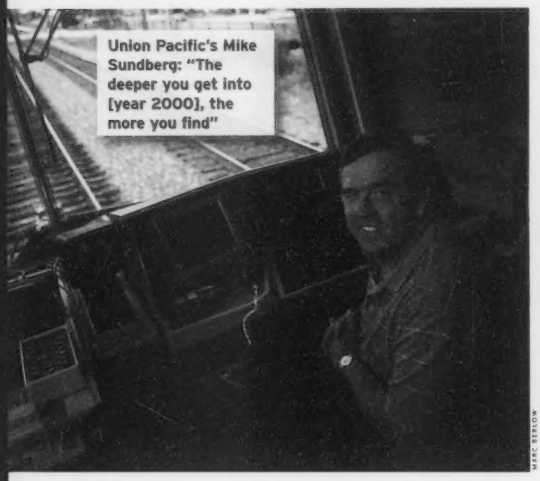
YEAR 2000 CHRONICLES, CHAPTER THREE

Experts needed for 2000 fixes

▸ *Railroad emphasizes non-IT participation*

Editor's note: This is the third in an occasional series following six companies as they work on their year 2000 problems.

UNION PACIFIC CORP. was well into building a new $6 million computerized railcar for recording maintenance data about its 36,000 miles of track when a problems with the test railcar was "all part of him doing his job," said Jim Fox, information systems director at the $9 billion railroad. Yet the discovery is a telling illustration of why business and operations managers outside of information technology must be involved in year 2000 projects.



Union Pacific's Mike Sundberg: "The deeper you get into [year 2000], the more you find"

MARC BERLIN

frightening thought stabbed Mike Sundberg.

"I remember worrying, 'Oh my God, we poured all of this money and resources into this new system. And everything we're doing with planning and long-range budgeting would be driven by data coming from the car. What's going to happen if it's not year 2000-compliant?' " recalled Sundberg, chief engineer of equipment systems at the railroad.

That was five years ago. And as it turned out, the railcar's onboard computer and sensor systems had some date problems, which Union Pacific and the car manufacturer later identified and are now fixing.

But Sundberg's stabbing feeling remained. He figured if there were problems with the test car, there also must be problems with a lot of other systems. "That was the defining moment for me," he said.

Sundberg's discovery of date

Union Pacific's year 2000 team relies on experts such as Sundberg. Fox said IT systems for automatic train refueling or weight and motion scales "are the responsibility of managers who, as part of due diligence, must check the technology they use in their departments."

Sundberg came up with a plan to ferret out the location and nature of date problems in the computer systems his group uses for everything from assembling railcars into trains to operating railroad crossing and signaling systems.

REPLACEMENT PLAN

Today, Sundberg's plan in engineering includes replacing several older systems, including Union Pacific's signaling system, with new software. That is less costly than repairing the original system. "We've classified all of our computer systems into two classes — critical and noncritical. The critical systems are those that would affect safety, such as the signal system and crossing system," he explained. Noncritical systems, he said, "are those that might give us a little heartburn, but would not affect either safety or operations."

Other systems deemed critical by the Union Pacific engineering department's 11-person year 2000 team are being renovated in-house by information systems staffers and contractors. The team identified four critical mainframe systems and another 10 client/server systems, all of which will be completed by this time next year, Sundberg said.

But to meet that deadline, other IT projects in engineering have had to take a backseat. Among the postponed projects are enhancements to a predictive modeling system, which would use data retrieved by the new computerized test car to generate long-range maintenance schedules and capital improvement budgets.

"When we first started getting into year 2000, we didn't realize it was going to take nearly all of our resources. But the deeper you get into it, the more you find," Sundberg said. As for the predictive modeling systems, "we'll still do that work. We'll just have to do it next year," he said.

Rail safety is the No. 1 priority of all railroads, according to Treadwell Davison, who manages the Association of American Railroads' year 2000 task force. Because railroads work together on customer shipments that cross company lines, association members, including Union Pacific, are sharing their year 2000 research, testing and recommendations, he said. — *Julia King*

Union Pacific

Year 2000 project budget: $46 million*

Lines of code: 72 million mainframe, 7 million client/server*

People on project: 104*

**Unchanged from January*

Brokerage tackles users, spreadsheets

NOW THAT ITS 300 mainframe "factory" workers have nearly completed renovations to some 110 million lines of legacy code, the real fun begins for Merrill Lynch — finding and fixing thousands of desktop and distributed applications.

That's an enormous challenge for the world's largest brokerage, where thousands of end users run self-customized spreadsheets that contain myriad date fields that need fixing.

The tricky part "is just locating" those end users and their applications, said Susan Luechinger, director of year 2000 implementation at the $31.7 billion New York-based brokerage.

To do that, the company's LAN administrators are giving renovation tools to each of the business units for end users to fix their own spreadsheets. When users have questions about the repairs, they can call the company's technical service center for answers.

Meanwhile, Luechinger and her top lieutenants are evaluating which of the company's mainframe factory workers they will reassign to find and fix distributed systems. "The ones who rose to the top" of Merrill Lynch's mainframe code renovations "tend to be good thinkers," Luechinger said.

Because the third-party code-fixing tools Merrill Lynch has used aren't foolproof, the best factory workers sought and found potential problems that the tools themselves couldn't reveal, Luechinger said.

BIG MONEY

Investors "have entrusted their life savings" with Merrill Lynch, so the success of the firm's year 2000 effort "is a trust factor for us more than a systems factor," said Randal Langdon, a director in the company's private client business in Princeton, N.J.

Langdon has a vested interest in the success of Merrill Lynch's year 2000 project. He is in charge of Merrill Lynch Online, an online investment service that supports 300,000 users representing $210 billion in assets.

The service plans to deliver online stock trading capabilities to its customers by year's end.

Langdon said Merrill Lynch Online is "highly dependent" on other back-office systems within Merrill Lynch that are more date-sensitive.

Susan Luechinger

JOHN RAE

Mainframe factory workers will be reassigned to find and fix distributed systems

Wall Street observers said they see Merrill Lynch taking a highly visible role in dealing with the millennium bug. The brokerage has been a leader in handling the year 2000 problem in financial services, both in terms of its approach and the amount of resources it is throwing at the problem, said Larry Tabb, an analyst at The Tower Group, a financial services and technology consultancy in Newton, Mass.

—*Thomas Hoffman*

Merrill Lynch

Year 2000 project budget: $200 million

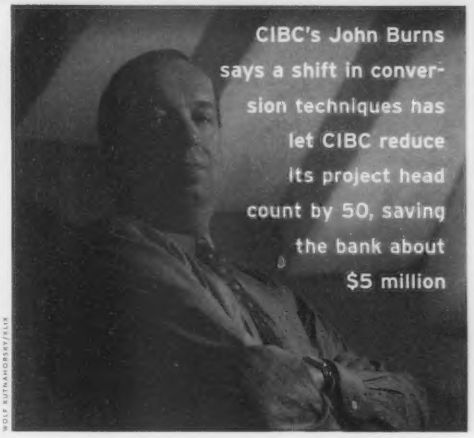
Lines of code: 170 million*

People on project: 300 (up 20% from January)

**Reported in January. Systems consolidation has decreased distributed applications by 33%.*

YEAR 2000 CHRONICLES, CHAPTER THREE

Growth makes 2000 a moving target



ROLF ZUTNHORST/FILX

EVEN A LEADER on year 2000 finds the problem to be a moving target.

Canadian Imperial Bank of Commerce (CIBC) in Toronto started its calculated, nine-step program in 1995 to find, fix and test its date-sensitive systems. But recent acquisitions have forced the bank's project team to absorb new systems and businesses. And CIBC, a $192.7 billion firm, has had to make some significant adjustments to the size and scope of its project.

Canadian Imperial Bank of Commerce

Year 2000 project budget: $200 million (up 33%)*

Lines of code: 75 million to 100 million

People on project: 400 to 500 (up 63%)*

** Changes since January*

Acquisitions such as New York investment manager Oppenheimer & Co. in November have driven CIBC's project costs up $50 million since last fall, said John Burns, vice president of projects at CIBC.

But a shift in conversion techniques from full date-field expansion to a less time-consuming and less expensive windowing approach since 1996 has let CIBC reduce its project head count by 50, saving the bank about $5 million in project costs, Burns said.

Full date-field expansion means upping the two-digit year software fields to four. Windowing is a programming trick that makes the computer see a certain range of two-digit years as being in the 21st century.

"If anything, we might come under our [$200 million project cost] estimate," Burns said. But "there may be some surprises" that keep the project at its current levels, he added.

For example, a recent inventory of end users' desktop systems found 45,000 spreadsheets that may require renovations. "That seems like a daunting task to find out how many of them have dates stuck in them, but we have a reasonable approach" to deal with it, said Kevin Patterson, a vice president in the bank's administration and finance group.

That includes having end users classify the importance of those spreadsheets as "low," "medium" or "high." CIBC will then prioritize which spreadsheets to fix first and use automated tools to scan the software for dates.

Because end users tend to customize their own spreadsheets, CIBC is having them test their applications once they are repaired, Patterson said.

On the desktop side, CIBC didn't start as early as it did with its mainframe systems, he said. But the desktop applications aren't as critical as the bank's "lifeblood systems," such as the corporate general ledger and accounting systems, which Patterson said are being repaired. And he said the bank's early start makes him confident: "The major financial applications we have running have been changed or are in the process of being changed."

Hugh M. Brown, a banking analyst at Nesbitt Burns, a Toronto-based investment bank, said he gives CIBC high marks. But the success of CIBC and other banks depends on the efforts of their partners and customers to fix their systems "so I'm still worried about it," Brown added.

— Thomas Hoffman

Sounding the alarm

The failure of date-impaired computer systems will trigger a global recession and a public panic in 2000. Whole industries, power generation and health care, for example, are likely to suffer "extended outages."

RICK CHARD/IDBA

That's the scenario sketched out by Joe Boiven, president of the Global Millennium Foundation in Ottawa. Boiven calls on developed countries to establish national year 2000 program offices by Oct. 1. He advises companies to set up firewalls against contaminated data and recommends the establishment of industry-specific emergency response teams.

Boiven, former head of year 2000 work at Canadian Imperial Bank of Commerce, left in December to start (with his own funds) the Global Millennium Foundation. He offers workshops at which he delivers mostly commonsense advice to overcome "the fear of the unknown that's causing a lot of inertia," he said.

Boiven outlines a five-step approach to year 2000 remediation at his Web site (*www.globalmf.org*). "As I raise the alarm, I try to counter with, 'Here's the solution,' and then develop shortcuts," he said. — Gary H. Anthes

'Tons of queries' come with code

▸ *Medical supplier must cover legal bases, too*

WITH ITS TWO most critical systems ready for 2000, C. R. Bard, Inc. should be popping the champagne corks.

But not so fast. As managers at the $1.3 billion medical device maker in Murray Hill, N.J., have found, when you are supplying potentially life-saving products, the lawyers come right behind the doctors.

"We're getting tons of queries now — some of them veiled threats — from the legal side of companies we deal with," said Paul Maszczak, the year 2000 project leader at Bard. Maszczak said inquiries about the year 2000 compliance of Bard's products have probably doubled in the past few months.

TOPIC OF CONVERSATION

"Year 2000 has become a topic of conversation no matter where you are," added Vince Gurnari, vice president of information systems at Bard. Gurnari said he regularly briefs Bard's top executives and publishes updates on year 2000 in monthly newsletters.

Because Bard makes mainly single-patient products such as catheters, there aren't any looming legal concerns, said Chief Financial Officer William Bopp. The few products that have been identified with year 2000 problems have been fixed, and those fixes are rolling out to customers.

GIORGIO PALMISSANO

Bard's Vince Gurnari says he briefs top execs regularly on year 2000 issues

Despite more communication from both supply-chain partners and customers, Bard has kept right on schedule with its technical fixes. The mainframe-based customer information and sales and marketing systems went live last month without a hitch — all 2.5 million lines of code and 708 programs of them.

For Bard's 500 field salespeople, the surge in year 2000 questions was disconcerting at first, said James Natale, president of corporate health care services. "A salesman would walk into a cardiology department and be asked to verify that our product is year 2000-compliant — and he was there to talk about how it would save lives!" Natale said. "Paul and his IT group have really helped us out. We're able to come back with a quick, clear response."

"Everybody is trying to protect themselves. The small hospitals are scared" of year 2000 legal problems, added Cherise Vaughn, president of C-Coe PeopleTec in Charleston, S.C. Her firms handles all year 2000 communication with Bard customers.

C. R. Bard

Year 2000 project budget: $11 million*

Lines of code: 8 million

People on project: 10

**Conversion 81% complete*

Year 2000 risks extend beyond computer systems into the potential for patient injury from malfunctioning lab equipment or medical devices, said attorney Diana J. P. McKenzie, a health care technology specialist at Gordon & Glickson PC in Chicago.

"This problem is so intense that a number of hospitals are making sure they don't have anyone in for nonemergency care when the date hits," McKenzie said.

— Maryfran Johnson

Team wins high-level backing

▸ *Year 2000 readiness now a priority at utility*

A LIGHTBULB has gone off for senior management at Conectiv.

Thanks to relentless drum beating by a small IT team, increasingly insistent inquiries from auditors and periodic barrages of press clippings from Chief Information Officer Bob Aveyard, year 2000 readiness is now an official $5 million initiative at the $2 billion utility.

Conectiv

Year 2000 project budget: $5 million (up 54%)*

Lines of code: 25 million

People on project: 14 (up 100%)*

** Changes since January*

In March, senior management appointed seven year 2000 coordinators from the business side to join the company's seven-person information technology team. Their top priority: identifying potential problems in specialized equipment different departments rely on. The information is then funneled to year 2000 project manager Chris Arena and his manager, Aveyard, whose triage approach assumes that a certain amount of work will go undone before the turn of the century. "What we're after are the things that will really affect customers," such as energy delivery systems, Aveyard said. "If an elevator doesn't work, it's not the end of the earth," he said.

Systems that do make it to the top of the triage list are either being replaced with new off-the-shelf software or renovated by IT staffers and independent contractors, Aveyard said. Conectiv has fixed its customer information system and is replacing its energy control and distribution systems.

The fact that elevators are even on the year 2000 radar screen marks major progress. Before March, the utility lacked plans for dealing with virtually all systems and equipment developed and maintained outside its own IT group. Systems for generating and distributing electrical power and gas weren't even on the agenda.

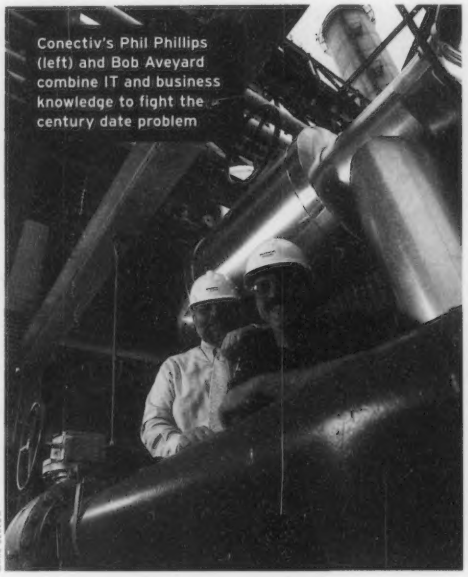
"Early on, most people perceived year 2000 as mostly a software problem that affected PCs and maybe the customer information system and just assumed that somebody in IT would take care of it," said gas engineering manager Phil Phillips, a recently appointed year 2000 coordinator.

OPENED DOORS

But as managers read more newspaper stories and were asked to complete more surveys, it sunk in that IT staff couldn't even be aware of some of the highly specialized equipment different departments use daily.

A prime example is a plastic fusion machine used to lay gas pipe.

"It just doesn't occur to someone [outside the gas delivery business] that a machine like that has a time and date stamp," Phillips said. "That's why it was important to pick year 2000 coordinators who are familiar with the business line. I certainly wasn't picked for my IT knowledge," he said.



Conectiv's Phil Phillips (left) and Bob Aveyard combine IT and business knowledge to fight the century date problem

MARC BERLOW

Phillips said if it weren't for Arena's team, which circulated risk assessment surveys and kept waving year 2000 flags, the issue might still be an IT-only initiative.

"Every project ... needs somebody who sees the big picture and all of the threads, and [Arena] serves in that role pretty well," Phillips said.

As for senior management, there is a noticeable reduction in hand-wringing, according to Aveyard. Even though "it's not a revenue-producing or exciting project, there's a relief that someone is on top of the year 2000 and working on it," Aveyard said.

Still, compared with other utilities, Conectiv is definitely lagging, largely because of its early focus on only the systems developed in-house by the company's IT group.

Brad Holcombe, managing partner at Andersen Consulting's utilities practice, said that like Conectiv, plenty of utilities have adopted a triage approach to year 2000 problems.

— Julia King

Big systems near done, Nabisco pushes partners

ASKED IF HE WILL BE sleeping New Year's Eve, 1999, the guy in charge of Nabisco, Inc.'s manufacturing software said, "Heck, I'll be sleeping next month."

Application manager Richard Clamp said all 2.5 million lines of manufacturing code have been converted for the year 2000, and 90% are tested. The company's two most critical systems — manufacturing resource planning and purchasing — have been fully remediated for 2000 and are in production.

Thanks in large measure to having started more than two years ago, the $8.7 billion maker of Oreos, Ritz crackers and other snack foods said all its software — both custom and packaged — will be year 2000-compliant in the first quarter of 1999.

But as Nabisco's information systems leaders grow more confident, the company's non-IS managers are becoming more concerned about year 2000 risks, said John Halper, Nabisco's year 2000 program manager. "The movement of year 2000 onto their radar screens has heightened as the mainstream business publications have addressed it," he said.

As work on internal systems begins to wind down, Nabisco will shift its focus to the outside — to business partners, customers and non-information technology vendors and service providers. "From the board level on down, there's a feeling that our plans for our own systems and engineering devices will be successful," Halper said. "But there's a lot outside the company that we are dependent on, and those are the things that make people nervous."

Next month, Nabisco will accelerate its planning work with transportation companies, raw materials suppliers, public warehouses and communications companies. The focus will be on contingency planning, Halper said. For example, the company might stockpile inventory at the end of 1999 or make arrangements with alternate suppliers for emergency deliveries.

Nabisco

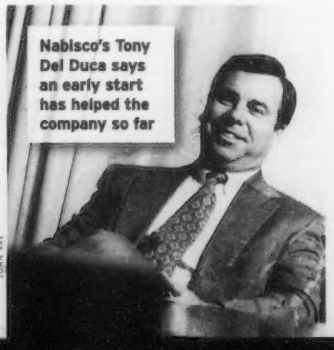
Year 2000 project budget: $22 million*

Business systems: 300**

People on project: 50 to 60*

**Unchanged from January*

***Plus 450 major systems components, including databases*



Nabisco's Tony Del Duca says an early start has helped the company so far

JOHN RAE

"As far as their internal systems are concerned, they appear to be in much better shape than the average company," said software expert Capers Jones, chairman of Software Productivity Research, Inc. in Burlington, Mass. But he said Nabisco would have to step up its work with outside parties if it doesn't want to risk "reinfecting" software and data it has already fixed.

Tony Del Duca, senior director of information services, attributed Nabisco's smooth sailing so far to an early start, the use of powerful, automated year 2000 tools and an early decision to replace rather than fix big, date-impaired legacy systems. *— Gary H. Anthes*

MOREONLINE

To read previous chapters in the Year 2000 Chronicles, see Computerworld's Web site:

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COMPUTERWORLD

QUICK STUDY

Hot trends & technologies in brief

International frame relay

DEFINITION: International frame-relay connections use high-speed frame-relay packet-switching protocols in a wide-area network that extends between countries. Businesses with foreign offices or partners abroad use the connections for transmission rates of 1.544M bit/sec. and, lately, much higher. Frame relay uses variable-length packets, so it's best suited for data and image transfer, not real-time voice and video. An international frame-relay service must be set up through a carrier that provides service to a particular country.

Frame relay fits the bill — for now

By Matt Hamblen

AT ISSUE
Frame relay vs. private lines

VIRTUAL PRIVATE NETWORKS may be the hottest new wide-area network technology, but several analysts say they believe the 10-year-old frame-relay approach offers multinational companies more reliable connections for now.

Those companies will use international frame-relay connections for data, voice and video transfer, according to analysts. Some companies will even use the connections to tie trading partners to a secure network.

Frame-relay transfer speeds have jumped to 45M bit/sec. in the past year, up from less than 2M bit/sec. That has allowed some providers to offer voice and videoconferencing over traditional data transmission lines.

"Cost savings is a big driver" for companies considering international frame connections, says Jeff Phillips, an analyst at Boston-based Telechoice, Inc. Costs of a connection to a foreign country can be cut in half compared with using a private line, and if a private line is cut, "you're out of luck" compared with the ability of a frame-relay network to reroute around a cut, Phillips says.

A company that uses its frame connection to send voice calls between company offices overseas will eliminate the cost of international calling, he adds.

That's because the user will pay for only the cost of the frame-relay service and not for each international long-distance telephone call. Phillips and other analysts caution companies setting up international frame-relay connections to determine whether the carrier will be serving the fabled "last mile," which is the link between a central office to a company premise in a country.

Carriers often overbook the capacity of their frame-relay networks, gambling that not all users will require the service at once. As a result, getting guarantees that packets won't be dropped should be a priority, says Ray Keneipp, an analyst at Current Analysis, Inc. in Sterling, Va.

Backup of the frame-relay network should also be a priority, a need made more apparent by AT&T Corp.'s domestic frame-relay outage on April 13.

According to Ellen Van Cleve, director of WAN services at *The New York Times*, international frame relay wasn't an appropriate choice for the paper because it was more expensive than cobbling together a variety of technologies, including satellite links, to tie in thousands of reporters, advertisers, circulation personnel and suppliers to the *Times*' international WAN.

In the future, the *Times* will consider creating a VPN because it gives reporters and others who leave their foreign offices for smaller cities more flexibility to file stories from hotels and makeshift offices, Van Cleve says.

"Our reporters are supposed to spend more time outside the office than inside," she says. □

QUICK STUDY ONLINE For vendors, *Computerworld* articles and other links to materials related to international frame relay, go to *www.computerworld.com/more.*

Countries where frame relay is offered by Sprint and AT&T

FAQ: Frame relay and VPNs

Q: What's the difference between setting up frame relay internationally and using a virtual private network (VPN)?
A: The biggest difference is that VPNs use an Internet Protocol that allows a user to communicate with anyone in the world using a combination of networks. An international frame-relay network is set up by one carrier and may not serve every country a business needs to reach.

Q: How do international frame-relay connections and VPN links compare in price and quality?
A: It depends on a carrier's requirements to set up a frame-relay network in a certain country. IP is sometimes considered unreliable, but service providers often include quality and security guarantees that can make a VPN highly reliable. Those guarantees may raise the price. Frame-relay customers can purchase equipment to monitor the quality of those connections for uptime and delays in sending data.

Q: What precautions should a business take in setting up an international frame-relay connection?
A: Insist on a service-level agreement based on how critical the data is. Also, the agreement should cover end-to-end service and not terminate in a central office abroad, short of the local loop into a customer's foreign office. And, check how much the carrier has overbooked its frame network.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at* ***stefanie_mccann@cw.com***

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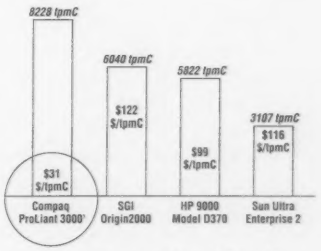

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COMPAQ

OPINION

The big chill, Y2K style

Maybe it was just my state of mind that day. Maybe I'd been talking about the perils of year 2000 projects with one too many dispirited information technology managers.

But when I clicked on the Web site of a law firm that specializes in IT and year 2000 issues, this welcoming message grabbed me by the throat: "The future is closer than you think. So are we."

That little promo probably was intended to impress would-be customers. But in my year 2000 state of mind, it sure sounded like a threat to me. Now, I think we're all expecting lawyers to swarm busily around the date-change screwups of the Fortune 1,000. There are at least seven year 2000 lawsuits filed — most of them class action — and we're still 18 months away from the turn of the century.

But far more alarming is the way this legal buzz is having a chilling effect on the truth.

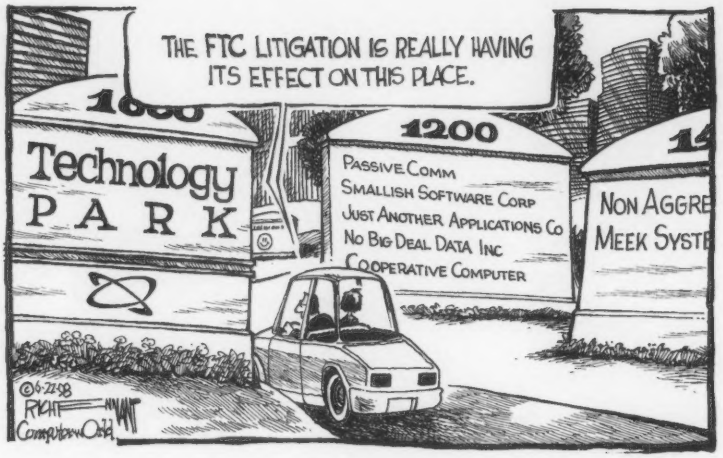
Companies that should be sharing year 2000 information with customers, suppliers, accounting firms or government agencies are zipping their lips at the direction of corporate counsel. Vague, mealy-mouthed answers to the simple question, "Is this product year 2000-compliant?" are fast becoming the norm from the vendor community. Precious time that could be spent fixing the problem is being squandered by year 2000 project teams crafting nondenial denials.

Even worse, the lawyers will soon be raiding the ranks of your IT staff and siphoning off yet another resource. One project manager told me he recently got a call from the chief counsel at the largest law firm in his state. The attorney is offering this long-time IT pro a five-year gig evaluating the technology side of year 2000 lawsuits for due diligence.

Now that we're thoroughly depressed here, what next? One excellent suggestion I've heard is to seek out and support independent third-party information brokers in your own vertical industry. In health care, for example, the Rx2000 Solutions Institute has a Web site (*www.rx2000.org*) geared to such information-sharing. Others are probably popping up daily.

So maybe the truth won't set us free. But it could generate just the heat we need to fend off the big chill.

Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*



LETTERS

Group looking for real-world year 2000 problems . . .

I AM RESPONDING to a letter by John Parke that appeared in the May 11 issue of *Computerworld*.

The writer makes an excellent point in calling for examples of year 2000 problems.

At the Information Technology Laboratory of the National Institute of Standards and Technology, we are indeed collecting examples of computer failures and historical project data regarding faults and failures caught during the development of software.

We are seriously attempting to quantify and qualify the types of problems that occur and planning a Web-based forum (on many software problems) such as Mr. Parke requests.

But getting industry to provide the data is not an easy task.

Anyone who wishes to contact us regarding data donations or to provide suggestions is invited to do so, at my E-mail address below.

Dolores R. Wallace
National Institute of Standards and Technology
Gaithersburg, Md.
dwallace@nist.gov.

. . . can start with these two right here

IN HIS LETTER TO *Computerworld*, John Parke asked for real examples of the potential for year 2000 computer problems.

Actually, they have already begun.

I am told that a prestigious business publication ceased offering five-year subscriptions at the end of 1994 simply because their computer couldn't handle the termination dates.

No one really knows how big the problem will be until it is too late. We will begin to find out next April, when the first corporations begin their fiscal year 2000.

But if you think software professionals have a problem, consider the funeral industry.

There are plenty of people with prepaid, pre-engraved gravestones with dates of the form "1929 — 19--."

Many of them will survive to the year 2000.

Have you ever tried to reprogram a granite monument?

Jim Daughtry
Maynard, Mass.
jdaughtry@impsoo14.us.dg.com

Maybe realistic qualifications would ease worker shortage

MANAGERS WHO are having trouble filling technology jobs may want to take a look at their requisitions.

I frequently see requisitions that have long lists of "essential" skills that are not likely to be possessed by one person.

I have seen some of these stay open for months, and I suspect that the recruiters just ignore them and spend their time on more realistic opportunities.

In the end, hiring always involves compromises about skill sets, so you may want to make your requisitions reflect this reality.

Steve Hovland
Walnut Creek, Calif.
74270.765@compuserve.com

Misleading SAP article

I WAS MISQUOTED in the *Computerworld* article "R/3 users await warehousing features" [CW, June 8] and would like to set the record straight about my comments on the stability of the beta code for the SAP Business Information Warehouse. During the interview, I said Dow Corning's policy is not to place any beta software into a live production environment. In no way did I imply there was a special concern about the stability of the SAP Business Information Warehouse beta code. In addition, *Computerworld* chose not to include the benefits and positive experiences Dow Corning has gained as a pilot customer of the SAP Business Information Warehouse.

Cynthia A. Hartz
Dow Corning Corp.

Editor's note: *Our story also incorrectly noted that software for archiving R/3 data won't be available until August with the general availability of the SAP Business Information Warehouse. SAP AG already offers archiving in its R/3 System, which is independent of the information warehouse and its availability.* Computerworld *regrets the errors.*

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Microsoft offers little year 2000 help

William Ulrich

The knowledge gap between the information technologist and average business user just grew a little wider. I was stunned when an end user told me Bill Gates would probably solve the year 2000 problem soon.

At first I thought he was joking, but he was serious.

How would Gates accomplish that? I buried that episode away as just another odd year 2000 encounter until I learned that a reporter asked Janet Reno if the U.S. would drop its Microsoft lawsuit if Gates solved the year 2000 problem. I was shocked.

How did that notion arise? It seems individuals outside IT have misinterpreted Microsoft's dominance in the PC market as an ability to manipulate an infinite spectrum of technology whenever the company pleases. That idea, while farfetched, must be dispelled because it could lead to the misconception that the year 2000 problem can be easily solved.

It helps put the issue into perspective by examining Microsoft's handling of the year 2000 problem to date. Gates, when asked about the year 2000 at Microsoft's Seattle-based CEO Summit last May, told attendees, "PCs are in good shape in this respect." Statements such as that one, coupled with Gates' claim that "you have a consulting industry that's grown up to exaggerate the nature of the problem," trivialized the year 2000 issue at a time when the industry needed help to build executive support to address the problem.

Stunningly, many outside IT think the company can fix the millennium bug single-handedly.

That's disconcerting in light of the fact that Microsoft didn't disclose compliance data for its own products until April and has disclosed information on only 50 or so of its 8,500 products. Finding out now that Windows NT and Windows 95, according to Microsoft's Web site, are compliant "with issues" further demonstrates that research into the matter is dragging.

It's clear that Microsoft is laboriously sifting through its legacy software portfolio and slowly posting year 2000 compliance data, like many other vendors. The big difference is that many of the other vendors, with IBM taking a lead, began communicating that information more than two years ago. Microsoft finds itself not as a year 2000 leader but as a reluctant follower, struggling to figure out which of its products will and will not function properly as the century draws to a close.

All of that may come as a surprise to those who think Microsoft can spearhead the drive to make the world year 2000-compliant. But there's a deeper message here: People who lack real-life experience in large-scale computer systems mistakenly believe year 2000 is a narrowly defined problem that lends itself to a narrowly defined solution.

How can there be a single solution to a problem that infects millions of computers, databases, vendor packages, interfaces and embedded devices worldwide? Even if a silver-bullet solution did come along, historically slow mobilization lead times would stop it from being deployed in time to make a difference.

Business leaders must stop looking for quick fixes and focus on mitigating risks to critical systems and suppliers. That requires fixing and testing high-priority systems, triaging nonessential technologies and building contingency plans for key business functions. We have roughly 18 months left, and Microsoft won't save us. Only we can do that now. □

Ulrich is president of Tactical Strategy Group, Inc. and executive vice president of Triaxsys Research LLP. He is co-author of The Year 2000 Software Crisis: Challenge of the Century *and* The Year 2000 Software Crisis: The Continuing Challenge. *His Internet address is tsginc@cruzio.com.*

How to prosper in the new Internet economy

John Gantz

With the help of *Computerworld*'s new sister publication, *The Industry Standard*, which bills itself as "The Newsmagazine of the Internet Economy," I have an expanded view of the impact the Internet will have on all our careers.

I'm afraid that I will have fewer challenges than you.

What prompted this new visionary focal setting was work I did on a white paper sponsored by *The Industry Standard* on the Internet economy, the title of which was "Architects of the Internet Economy: Redesigning the Rules of Business." First, I estimated the size of the community of individuals "building" and "designing" this new economy. Then I took a whack at forecasting the size of the economy itself.

The first eye-opener is who's making this Internet economy happen. We classified about 80,000 individuals in the U.S. as true architects of the Internet economy. Only about half are from the IT professional community. The rest are marketing and technical people from vendors and telephone companies, content developers, media executives and professional service firms, including venture capitalists, journalists, management consultants — and yes, even *Computerworld* columnists. ("Opinion-making" is a growth industry.)

The second eye-opener is the makeup of the Internet economy itself. There is, of course, spending on Web technologies — computers, services, software, webmaster salaries, application developers and so on — which today accounts for about half of the total U.S. Internet economy of $124 billion. The other half is spent on marketing and advertising, professional services, content creation and packaging, non-IT education and training, and other areas.

But by 2002, the technology deployment piece of the economy will drop to 39% of the $518 billion pie. Yes, U.S. companies will spend three times this year's figure on technology — mostly from their IT budgets — but they'll spend a lot more elsewhere in the organization. They'll spend big bucks on everything from intellectual property lawyers and Internet ads to Web marketing specialists and management consultants.

In short, IT professionals won't be the center of this new universe.

That means this: Today, IT professionals are integral to making Internet applications successful. They may not be the application champions, but they surely play a highly leveraged and visible role. But as time goes on, the technical skills needed to make Internet applications work will become a commodity. New software packages, new service offerings and a better-understood business model will take the art out of developing new Internet applications. Two years ago, leading Web site developers were crying for Common Gateway Interface and Perl programmers. Today, they solve their needs with tools that mere humans can work with.

IT professionals won't be the center of this universe.

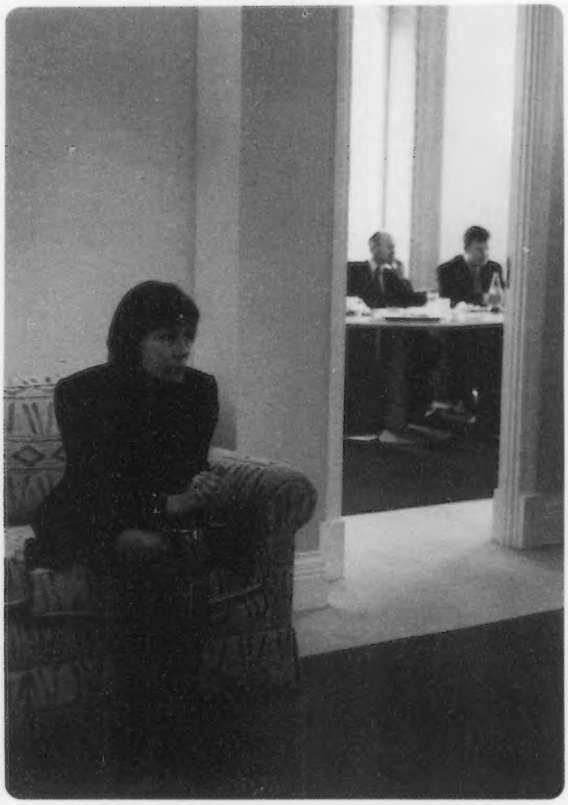
Career options for IT professionals will bifurcate. Path One will be the technical route, where programming and design skills will be subsumed to feature knowledge of the right software tools. Path Two will be the business manager route, where IT professionals with the right personalities and backgrounds can essentially leave the technical ranks for the online business ranks.

Good luck. I think we're still in the phase of the Internet economy's development where technical skills are critical — and highly rewarded.

However, a few years hence, what we ask of our technical people will be more routine and less glamorous. □

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

.WORK THE WEB.



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THe CIO IS iN THE hot seat as the executive committee drills one department head after another on escalating costs. How are you going to [1](get the newly acquired subsidiary onto our e-mail system)? How are you going to [2](hold down your network administration head count) as you add hundreds of new users? How can you afford to [3](roll out new apps to the whole company)? It's like the Spanish Inquisition, but the food is worse. Her stomach rumbles from the dry turkey sandwich and yuppie water served at the start of the meeting as one committee member wakes up long enough to ask about the [4](Year 2000 problem) he saw on a CNN segment. "Not a problem, we have it covered," she replies. With an unforeseen compliment for completing the [5](global supplier extranet) project, she is excused. Exiting, she smiles at the beleaguered marketing director, who is about to be skewered because the company's celebrity pitchman has just appeared on the cover of a major supermarket tabloid.

THE [6](BEST PARTS) OF HER MEETING WERE MADE POSSIBLE BY LOTUS.

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In IT, the world is gaining on the U.S.

Dan Gillmor

During a recent reporting trip to Israel, I stopped by a nondescript building in a gray, industrial part of Tel Aviv to visit a small company called Mirabilis. I'd seen the company's "buddy list" software, which had become one of the major downloading hits on the Internet, and was curious about its business plan.

A company executive assured me there was a plan: to aggregate eyeballs — and then worry about how to make money. Two weeks ago, I found out how well the plan had worked: America Online acquired Mirabilis for more than $270 million.

I'd heard about the technology scene in Israel before I visited the tiny Middle Eastern nation. I'd heard about the frenetic energy, the brainpower, the self-confidence that bordered on arrogance and the entrepreneurial frenzy. I found all that and more.

What a peculiarly provincial view of the world we have.

And I was reminded, as always happens when I travel overseas, what a peculiarly provincial view of the world we have in the U.S. In our smugness about the twin triumphs of capitalism and democracy, we assume our own superiority. It's a foolish assumption.

Yes, the U.S. leads the world in technology. We have robust and stable economic and political systems that encourage creativity and entrepreneurship.

But there are plenty of smart people elsewhere, and other countries are creating the political, economic and physical infrastructures to support them. We miss a bet if we think all the good technology is created here; and we miss an important reality if we believe our good fortune is destined to last forever.

Some of the biggest technology companies have recognized that for years. IBM set up a research lab in Israel almost three decades ago, one of several around the world. Intel, Microsoft, Applied Materials, Motorola and many other U.S. tech companies also have taken advantage of Israel's well-educated workforce and world-class talent in mathematics, engineering and the sciences. It's common these days for Israeli-founded companies to put their sales and marketing people in the U.S. while handling research and development in Israel.

While overseas companies tend to have American beachheads, foreign governments don't want to become mere economic colonies of the U.S. in the Information Age. They're putting their resources to work to assure that outcome.

Are we?

The U.S. boasts some of the best universities in the world. But we are systematically undermining our public education system, grades K-12. I disagree with those who blame teachers' unions, but you'd have to be blind to deny that our society is shortchanging our children — and our future — with our cavalier attitude toward serious education.

English has become the international language of commerce. That has allowed Americans to get away with a cultural laziness about language. In most parts of the world, educated people speak at least two languages — and one of those tends to be English.

Larry Ellison noted recently that there are more people who speak English in China than there are in the U.S., and that China is pushing hard to educate engineers. Ellison also pointed out how relatively few math and engineering graduate degrees from U.S. universities are going to U.S. citizens, another dangerous trend.

We are nearing the end of what has been tagged, and for good reason, the American Century. I wonder what historians will call the next one. □

Gillmor is technology columnist at The San Jose Mercury News. *His Internet address is dgillmor@sjmercury.com.*

Government intervention as a rite of passage

David Moschella

For better or for worse, 1998 will likely be remembered as the year Washington joined Silicon Valley as an essential part of the IT industry's power structure.

Just think about recent headline topics: antitrust actions, Internet taxation, individual privacy, encryption controls, domain name registration, school access subsidies, telecommunications reform, spectrum auctions, H-1B visas, universal service, intellectual property protection.

Is there any doubt that something fundamental has changed?

In more cynical moments, it's easy to think that politicians have finally found a way to shake down an information industry that traditionally hasn't felt the need to buy itself a seat at the table. But that's only the sad part of the story. The fact is, our industry has become so ubiquitous and so important that it can't really move forward without taking other social institutions with it. Sometimes that means getting the government to back off, and other times it means asking for help.

Consider that technology companies have asked Washington to drop encryption controls, put a moratorium on Internet taxation and trust the private sector to work out privacy concerns. But those companies have also asked the government to protect their property around the world (even to the point of banning certain types of copying equipment). They want looser immigration laws. And in many cases, they hope the government steps in to curb Microsoft. That isn't exactly libertarianism.

Many will find this more co-dependent phase of IT industry evolution somewhat frustrating, even depressing. But consider it to be a rite of passage. In the end, only the most important industries — banking, energy, airlines, railroads, telecommunications, food, health care and a few others — get such attention. At various times in their histories, all those industries have had to work closely with government to achieve varying degrees of interoperability, stability, safety, ubiquity and fairness.

For the IT industry to prosper, it too must work effectively with the public sector. That will require a mix of money, experience, flexibility, patience, pragmatism and credibility. Unfortunately, thus far, I would give our industry generally low marks. It tends to believe its positions are the only valid views, often showing open disdain for state and local tax authorities, law enforcement officials and third-world development concerns. Too often, even when right, it comes across as arrogant, smug and narrow.

Credibility, perhaps, is an even greater concern. To be effective, the IT industry must be believed when it says encryption restrictions really *do* hurt software exports, that the private sector really *can* deliver sufficient individual privacy, that there really *is* a serious IT worker shortage.

The courts of law and public opinion are emerging as market forces.

But those valid arguments are weakened when the industry's most visible and powerful leaders, Microsoft and Intel, insist they don't have monopoly power, or when Microsoft claims that Windows 95 and Internet Explorer really are integrated products. After those whoppers, why should anyone in Washington believe anything else they say?

How our industry's leaders handle today's public pressures will say a lot not only about who they are, but also about the very image of our business. The court of law and the court of public opinion are emerging as market forces every bit as important as bits and bytes. Our industry is moving toward a new, and higher, plateau. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is dmoschella@earthlink.net.*

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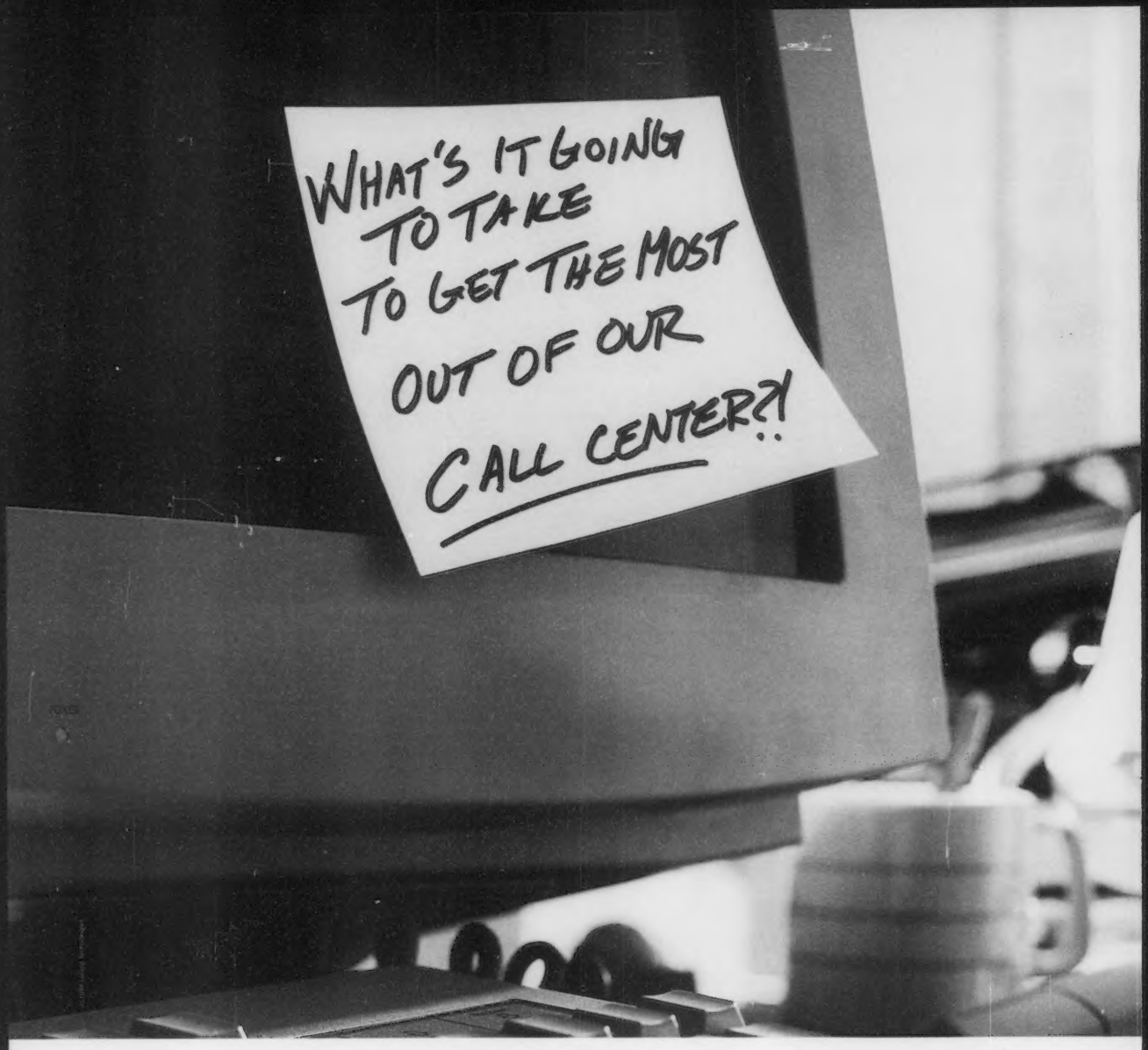

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Corporate Strategies

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Briefs

MORE FREE TOASTERS

Surprisingly enough, big bank mergers have fueled the growth of new banks (predominantly community banks) since 1995

Year	New bank charters
1994	50
1995	102
1996	146
1997	188

Source: Federal Deposit Insurance Corp., Washington

Year 2000 recovery

Comdisco Continuity Business Services in Rosemont, Ill., has introduced a year 2000 recovery program for customers who have resolved their internal year 2000 problem but may require backup in the event of an unforeseen business interruption. The program is free.

Customers must execute their year 2000 test plans by Nov. 1, 1999. They must also provide audit certification to Comdisco. Because the year 2000 problem isn't an unforeseen event, it isn't "declarable" under most Comdisco customer agreements.

Leading electronic-commerce consultants

Company	Dedicated E-commerce consultants
Cambridge Technology Partners	300
Deloitte & Touche Consulting	250
Ernst & Young	250
Coopers & Lybrand	200
KPMG Consulting	190
Diamond Technology Partners	120
MCI Systemhouse	100

Based on company information and estimates

Source: Kennedy Research Group, Fitzwilliam, N.H.

UPI reports good prospects

▸ *News service gets wired for profit*

By Thomas Hoffman

SIX MONTHS AGO, United Press International CEO James Adams predicted that replacing a sometimes shaky satellite network with the Internet would help make the company profitable for the first time.

Though Adams still has that vision, he acknowledged that changing the entrenched corporate culture at the Washington-based news service has been his biggest challenge.

DÉJÀ VU

WHATEVER HAPPENED TO:

UPI's Internet project

www.computerworld.com/more

"When I started here, it was like being in a funeral parlor," Adams said. Now, "it's fun, it's young, it's easy-going."

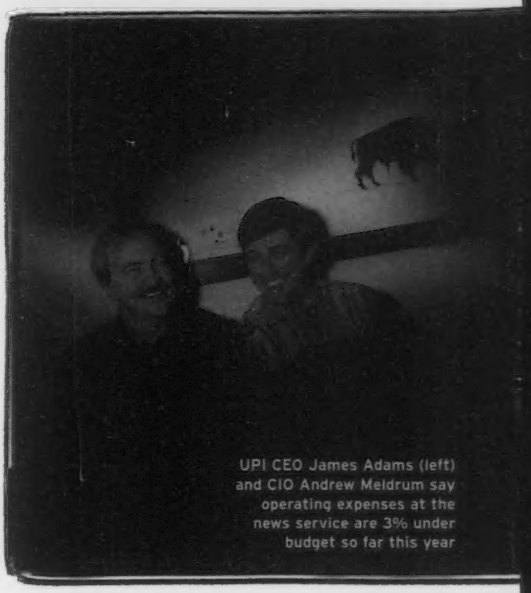
Adams has been working hard to move the unprofitable news organization away from its expensive satellite-based delivery network and ship out its print, audio, photography and other content via the Internet [CW, Dec. 29, 1997/Jan. 5, 1998]. He expects the Internet, which is "several million dollars" cheaper than communicating by satellite, will help make UPI profitable by next year.

The company has lost money every quarter but one in its more than 90-year history.

Adams' approach seems to be working. The revenue for UPI's radio feeds and Spanish and Arabic language services has grown consistently each month this year, Adams said.

Although he declined to quantify its revenue growth, Adams said UPI's operating expenses are 3% under budget so far this year.

New revenue is coming from more aggressive gathering and packaging of news for UPI's customers — newspapers, radio stations and other news outlets. For example, UPI recently put together a package of World Cup human interest and background stories and photos that newspapers can pick up for the six weeks of the World Cup. It will pump $250,000 into UPI's coffers, Adams said.



CHRIS HARTLOVE

UPI CEO James Adams (left) and CIO Andrew Meldrum say operating expenses at the news service are 3% under budget so far this year

UPI's Spanish team came up with the idea and handed it to the company's "skunkworks" development center, which analyzed the cost and potential payback of the package before approving work on it.

Employees brainstormed the project on a recently deployed corporate intranet, and it went from concept to delivery in two weeks.

UPI, page 40

SEC tightens up on year 2000 requirements

▸ *Government pushes for meaningful data*

By Matt Hamblen

PUBLIC COMPANIES may run from year 2000 problems, but they shouldn't hide them.

That's the attitude the Securities and Exchange Commission is taking following a survey that SEC officials said shows companies aren't providing investors enough meaningful information on year 2000 repairs.

SEC Commissioner Laura S. Unger told a Senate subcommittee June 10 that the SEC will issue a new interpretation of its year 2000 disclosure requirements of public companies within two months.

YEAR 2000 DISCLOSURE

Annual reports of the 93 largest publicly traded companies show:

- **44%** didn't disclose any year 2000 plan
- **64%** didn't disclose a year 2000 remediation timetable
- **78%** didn't disclose estimated year 2000 costs
- **9%** said year 2000 could have a material impact

Source: Securities and Exchange Commission, Washington

In response, several public companies said they would comply with the new guidelines. But a spokesman for the Securities Industry Association (SIA) in New York said brokers don't want new reporting requirements to divert their attention from year 2000 repairs.

"It's appropriate for public companies to give more information, but it has to be done so the requirements aren't too cumbersome, because you're squeezing the resources of people who are working furiously to get ready" for year 2000, said Art Thomas, chairman of the SIA's year 2000 program.

In addition, a spokesman for the National Retail Federation

SEC, page 40

WOMEN IN IT

Focus shifts from gender to business

By Laura DiDio
San Jose, Calif.

RATHER THAN focusing exclusively on how women can crack the glass ceiling between them and the executive suite, this year's Women in Technology International, Inc. (WITI) conference will show women how to use technology to help the business itself.

The more business-oriented focus represents somewhat of a departure for the group, whose three previous conferences dealt primarily with gender-specific issues, said Julie Lubbering, a WITI liaison manager.

The group expects about 4,500 attendees at this year's conference, which will start here Wednesday. That is four times the number of attendees at the inaugural WITI conference in 1995, according to Carolyn Leighton, WITI's founding

WITI, page 40

SEC tightens grip

CONTINUED FROM PAGE 39

(NRF) said the nation's retailers are put in a tough spot when making full disclosures that could scare away investors, especially when dealing with private suppliers that don't need to make their own preparations public.

"Retailers do work with a lot of privately held companies that are suppliers, so it becomes very difficult to disclose," said Don Gilbert, senior vice president at the Washington-based NRF, which represents thousands of retail companies.

"There was very little information in the disclosures, but there's enough to make us worry."
– Edward Yardeni, Deutsche Bank

Unger said the SEC could enforce the new rules against companies that fail to disclose important year 2000 information. The new interpretation is required because of the "apparent misconception" by many public companies that year 2000 information must be disclosed only if the costs of fixing the problem are material, Unger said. "Material" means an event so significant that it would reduce earnings or assets by more than 5%.

After studying the annual and quarterly reports of 1,023 publicly traded companies, including the 93 largest companies it tracks, the SEC concluded that it "had not fully succeeded in obtaining the quality of disclosure investors need." Although 70% of the companies discussed year 2000 in their 1998 annual reports, most provided too little information, the SEC said (see chart, page 39).

"U.S. companies are not providing the kind of meaningful information necessary for even the most sophisticated investors to assess year 2000 readiness," said Sen. Robert Bennett (R-Utah) at a hearing of the Subcommittee on Financial Services and Technology.

"There was very little information in the disclosures, but there's enough to make us worry," said Edward Yardeni, chief economist at Deutsche Bank Securities in New York, in an interview after testifying before the committee.

Yardeni said the SEC should demand that in each quarterly report companies disclose the percentage of their critical systems that are fixed. He said the SEC should consider asking companies to file a special year 2000 report that is separate from quarterly or annual statements.

In his own study of 500 publicly traded companies, Yardeni said most are looking only at the material impact of year 2000 problems and repairs during 1998 and 1999. They aren't looking at 2000 and beyond when the odds are greater that major problems — the failure of critical systems, for example — could occur.

Reports from AT&T Corp. in Basking Ridge, N.J., for example, state that the company expects to spend $350 million this year on year 2000 repairs and that it is still assessing the impact in 1999, Yardeni said. The company has provided more information on its World Wide Web site about preparations, but "most of it is vague and of little investment value," Yardeni said.

An AT&T spokesman responded that the company will gladly follow any further disclosure requirements from the SEC.

WorldCom, Inc. in Jackson, Miss., doesn't expect to face material consequences from year 2000, yet management acknowledged it is still gathering information from suppliers, Yardeni said. A WorldCom spokesman had no response. □

WITI focus shifts to business

CONTINUED FROM PAGE 39

executive director.

Leighton said new business and technology sessions represent a natural progression to WITI's original mission to advance women to executive-level positions. She said she hopes the sessions will help women become more technologically literate and financially independent and will motivate young women to choose careers in science and technology.

GETTING PRACTICAL

"When WITI was formed in 1989, there was a pent-up demand to address gender issues in the workplace which had long been ignored. Now we're finding that — while those issues are still crucial and need to be addressed — women want to go beyond that and get practical. Information from our conference that will give them a competitive advantage in the workplace," Leighton said.

Previous conferences focused on roundtable discussions of sexism, ageism and salary inequities.

Those sessions are still available this year.

But the gems of this conference are the Technology and Business Development tracks, which will include discussions of the best practices in electronic commerce, the latest Java developments and the requirements for building a LAN/WAN infrastructure to suit the user's business needs. The business development track also will feature a session on how women can get capital funding for their own businesses.

Even so, the gender gap is still very much an issue, Leighton said.

A 1995 U.S. Department of Labor study found that 97% of the senior managers of Fortune 1,000 companies are male, and 95% to 97% are white.

In Fortune 2,000 industrial and service firms, only 5% of the managers are women, and virtually all are white. The study also indicated that in those instances where women and minority men have reached the top spots, their compensation is lower — about 79% compared with white male top executives (see chart at left).

One study of Stanford School of Business graduates found that more than a decade after graduating, men were eight times more likely than women to become CEOs. All of which underscores the need for the WITI conference, said Karen Marengi, second vice president of investments at Salomon Smith Barney in Austin, Texas. Marengi has attended the conference for the past four years.

Women's earnings as a percentage of men's earnings

1960	61%
1965	60%
1970	59%
1975	59%
1980	60%
1985	65%
1990	72%
1996	74%

Source: U.S. Department of Labor, Washington

Speakers at the WITI conference include:

- Susan Larson, vice president of enterprise accounts at Dell Computer Corp. in Round Rock, Texas
- Roberta Katz, vice president and general counsel at Netscape Communications Corp. in Mountain View, Calif.
- Denise Gilbert, president and CEO of Incyte Pharmaceuticals, Inc. in New York

NETWORKING

"It's a terrific opportunity for women to network and get practical ideas on how to get ahead in corporate America," Marengi said. "Power comes from knowledge, and today's businesswomen at all stages of their careers need to know where the advancements are and who the visionaries are so that they can better position themselves in their chosen industry."

On a personal note, Marengi said she finds it "uplifting and energizing" to be around so many bright, accomplished women.

"As far as I know, there's no other forum like this [for women] to network," Marengi said. □

UPI reports good prospects

CONTINUED FROM PAGE 39

That kind of turnaround represents a sea change from the way operations used to run at UPI. "When you ask [customers] what they need and then deliver it, they look at you with a gasp of astonishment," Adams said. "That's just not something that's happened in the past [at UPI]."

STAFF SUPPORT

Adams' dynamic approach has helped him gain buy-in from UPI's most senior employee, Helen Thomas, the Washington bureau chief who joined the company in 1943.

"High tech is going to be very important to journalism, and [Adams] has brought a whole new life to the agency," said Thomas, who joined UPI when manual typewriters were king.

And if the highly regarded Thomas buys in to that vision, "that's good enough for me," said Ken Bazinet, a UPI White House correspondent who reports to her.

One media analyst said UPI's Internet-led profitability strategy should work well, in theory at least. "This strategy supports revenue growth and lower costs — what's not to like?" said Michael W. Ellman, an analyst at Schroder & Co., a New York-based investment bank.

However, Ellman raised concerns about the possibility that UPI stories "could be poached" by competitors over the 'net.

Despite UPI's progress in the past several months, the news organization still has a lot of work to do before it reaches its profit goal, acknowledged Adams and UPI Chief Information Officer Andrew Meldrum.

Since December, UPI has consolidated its four legacy operating systems and now operates its content production operations on Digital Equipment Corp.'s VMS. In a few months, it will replace those machines with Windows NT servers, Meldrum said.

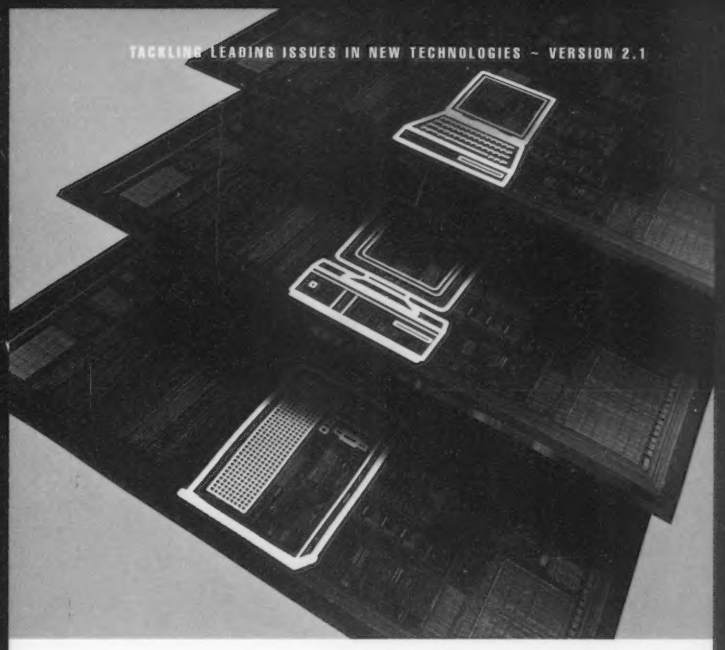
UPI also is a month away from completing the rollout of Microsoft Corp.'s Exchange electronic mail and other World Wide Web systems to support its content delivery, he said.

MORE WORK AHEAD

Still, Meldrum said, he had hoped to have replaced every computer used by UPI's reporters and editors by the end of the first quarter. Instead, he was able to reach 70% of his goal, a figure Bazinet said is accurate.

"We definitely have not achieved everything we wanted" in the first quarter, Adams said, "but you have to set high bars." □

TACKLING LEADING ISSUES IN NEW TECHNOLOGIES ~ VERSION 2.1



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Intel's Foundation for the Enterprise

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Intel Tech Buzz

P6 MICROARCHITECTURE

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P6 MICROARCHITECTURE

3 Vectors of Performance

When evaluating processor performance, Intel has determined there are three important vectors: integer, floating point and multimedia.

- Integer performance affects a PC's ability to handle number-intensive data like that found in productivity applications such as spreadsheets.
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- **Data flow analysis** analyzes and schedules instructions so that they are executed in an optimal sequence, independent of the original program order.
- **Speculative execution** increases the rate of execution by looking ahead of the program counter and executing instructions that are likely to be needed.

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Intel® Pentium® II processor	• Performance for mainstream desktop and mobile PCs • Headroom for tomorrow's applications	• Built-in L2 cache • P6 microarchitecture • Wired for Management compliant • MMX technology
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Internet Commerce

Electronic Commerce ♦ The World Wide Web ♦ Intranets

Briefs

More 'net acquisitions

Bowne & Co. has acquired personalization software firm Open Sesame in Cambridge, Mass., as part of its efforts to expand Internet services to clients in the financial and automotive industries. New York-based Bowne, a technology services and financial printing firm, also purchased Mountain Lake Software Corp. in Toronto. Financial terms weren't disclosed.

Online travel group

Ten companies involved in online travel have formed a trade organization to promote the industry to the public. The Washington-based Interactive Travel Services Association will "exist primarily on the Internet," the group said, at *www.interactivetravel.org/*. Members include American Express Co., America Online, Inc. and Microsoft Corp.

IBM adds multimedia

IBM last week announced plans to add multimedia to a wide range of its electronic-commerce offerings. Video, audio and three-dimensional functionality, for example, will be added to products such as Net.Commerce software.

E-mail notification

Imagina, Inc. in Portland, Ore., a developer of Internet software applications, last week said it acquired San Diego-based NotifyMail Software. That company's namesake E-mail notification software, NotifyMail, was designed to work with an organization's mail server and seeks to reduce demand on E-mail servers. Imagina develops products that help organizations optimize their use of the Internet.

JUST THE FAX

Number of pages faxed over the Internet

1997	44M
2000	5.6B *

* *Projected*

Source: Dataquest, San Jose, Calif.

Web is wrong medium for some firms

▸ *Privacy concerns, access hold some back*

By Barb Cole-Gomolski

LIFEMASTERS SUPPORTED HEALTHCARE, INC. in San Francisco is keen to let patients upload their vital signs using the Internet instead of the telephone. Doing so would allow Lifemasters, which tracks chronically ill patients and provides preventative care, to get the information faster.

ELECTRONIC COMMERCE

But there is a glitch. Many of Lifemasters' patients are elderly and don't have computers.

Myriad benefits may await companies that can offer customer service over the World Wide Web, from cost savings to the ability to reach more customers. Meta Group, Inc., a research firm in Stamford, Conn., estimates that the average Internet-based customer service interaction costs pennies, compared with about $5 for a typical customer service phone call.

But going on the Web clearly isn't for everyone. Some constituencies lack widespread Internet access. Concerns about privacy present other obstacles, according to companies piloting 'net-based customer service applications.

Focus groups conducted by Hartford, Conn.-based Aetna US Healthcare showed that "people are happy to find a doctor that is within 10 miles of their house over the Web," said David Kirshenbaum, general manager of electronic commerce at Aetna. "But they are not about to volunteer their medical history or discuss a diagnosis using a customer service application on the Internet."

WEB-BASED CUSTOMER SERVICE

Pros

- Less expensive than call centers
- Number of customers who can be helped not limited by number of customer service representatives
- Companies can automate responses to routine questions

Cons

- Not everyone has access to a computer or the Internet
- Customers may not want to disclose private information on the Internet
- Unproven scalability of customer service applications

Sometimes, the roadblock to Web-based customer service involves compatibility between the systems used by the customer and those used by the company. Because most of those applications have built-in security, using them can be more

Web, page 44

Soccer rules Web during World Cup

▸ *Traffic on some sites reaches record levels*

By Sharon Machlis

WITH A TV audience expected to hit 37 billion, the World Cup soccer tournament that kicked off in France earlier this month is "like having a Super Bowl every day for weeks," said Ross Levinsohn, vice president of programming at Web publisher SportsLine USA, Inc.

And with several games played during the workday in much of the world, making it tough for die-hard enthusiasts to see all the contests they want on television, many fans are following their favorite teams' progress on the World Wide Web. Some Web sites covering the tournament have had more than 500,000 visitors daily.

"This is turning out to be the most heavily trafficked area we have ever produced," Levinsohn said of SportsLine's World Cup coverage. The Fort Lauderdale, Fla., company has a five-year contract to publish the CBS

World Cup, page 42

ALLSPORT/CLIVE BRUNSKILL

Brian Maisonneuve (front) of the U.S. holds off Olaf Thon of Germany in the U.S.'s doomed first effort in Paris last week

APP SERVERS

Tools provide Web access to databases

By Carol Sliwa

THOMSON FINANCIAL Services, Inc. needed a quick way to build an intranet application that could track job candidates and another to monitor consultants' work hours. The Boston-based company decided to use an application server from SilverStream Software, Inc. in Burlington, Mass., for its strong Java support and its easy-to-use database interfaces, according to Bruce Sebell, director of information systems and technology at Thomson.

Likewise, when Bankers Trust New York Corp. wanted to create Java front ends to hook in to its legacy systems, the investment bank piloted the SilverStream Application Server. Its application will let 200 senior employees worldwide share information relating to mergers and acquisitions.

"This gave us a chance to get online quickly. Over time, we'll expand the pilot. Next time, we will probably access our Lotus Notes databases," said Jerry Archer, a managing director in the digital business solutions group at Bankers Trust.

Companies such as Thomson Financial and Bankers Trust are

Tools provide, page 42

World Cup

CONTINUED FROM PAGE 41

SportsLine Web site (Cup coverage at *http://worldcup.soccernet.com*).

The official World Cup site, *www.france98.com*, took 50 million hits on opening day June 10, or about 570,000 separate user sessions, said Todd Oken, Internet project manager for the site. Site organizers said that was the heaviest single-day traffic for any sports page in Web history, beating out the Summer Olympic Games in Atlanta and this year's Super Bowl, among other events.

Last Monday, when both the U.S. and British teams were playing, the numbers soared to almost 59 million hits and 660,000 user sessions.

Check-ins have come from 170 countries so far, with fewer than half the hits coming from the U.S., a figure that is in line with TV viewership. "We are thrilled we have the reach we did," said Oken, an employee at system integrator Electronic Data Systems Corp., one of the site's sponsors.

HEAVY TRAFFIC

Other sports sites also are seeing increased traffic. CNNSI, a joint venture of CNN and *Sports Illustrated*, is getting about 1.5 million page views per day in its World Cup area, boosting the usual site traffic of about 4 million to 5 million page views by 30% to 40%, said Steve Zales, general manager of CNNSI Interactive. During last week's U.S. and U.K. matches, it had 2.3 million page views.

Several sports sites are looking to expand their audience overseas during the tournament because the World Cup is typically more popular in many European, South American and Asian countries than in the U.S. CBS SportsLine has linked up with various partners to deliver coverage in six languages, while Yahoo Sports boasts about a dozen.

"Our traffic has gone up tremendously," said Tonya Antonucci, sports producer at Yahoo, Inc. in Santa Clara, Calif., which is the most heavily trafficked site on the Web (see story, page 44).

As with conventional TV advertising, companies have different objectives for their World Cup Web efforts, with some looking to directly increase revenue and others simply seeking to boost their corporate image.

The Gillette Co., a tournament sponsor, decided to launch a special soccer search engine (*www.GilletteSoccer.com* for the U.S., but set up as *www.GilletteFootball.com* for other areas) with Digital Equipment Corp.'s AltaVista technology so fans could easily find information about their favorite teams or soccer subjects across the Web.

"We are big into World Cup soccer. It enhances our brand," said Andy Shen, director of interactive marketing at Boston-based Gillette. "This is an extension to that whole program . . . for a very low [cost per thousand consumers reached]."

Meanwhile, SportsLine said its World Cup coverage has already turned a profit, attracting more than $1 million in sponsorship from eight major advertisers (although CBS SportsLine as a whole isn't profitable yet).

"Right now, this business is about growth and revenue generation," Levinsohn said. "The World Cup as a whole is very successful for us." □

IT and the Cup

The World Cup soccer games themselves had a little help from information technology.

A computer-aided design system, for instance, let show organizers visualize seating details of each of the tournament's 10 stadium locations in an effort to keep fans of rival teams separate and to preclude violence.

"They're putting the most zealous fans on opposite sides of the stadium — we can seat people in the stadium to protect them," said Katey Kennedy, a marketing manager at one of the vendors, Hewlett-Packard Co. "If the committee were to receive a large return of tickets, they would be able to reallocate them efficiently and precisely."

The software also let the organizing committee determine which stadium seats would be blocked by the 17 television cameras located in the stadium bleachers. Those seats were then removed from inventory.

HP, with France Telecom, also built a wide-area network to link the 10 soccer sites. It was used to schedule 12,000 volunteers and accredit 50,000 World Cup press, workers and van drivers. — Jeanette Borzo, Paris bureau chief at the IDG News Service.

Tools provide Web access

CONTINUED FROM PAGE 41

by no means alone in seeking remote access to databases via application servers. Analysts expect demand for application servers — which handle much of the processing of an application and make database connections much easier — to grow a lot during the next few years.

International Data Corp. (IDC), a Framingham, Mass.-based consultancy, predicts that the market for application servers and development tools for them will grow to $1 billion by 2001, up from $300 million this year.

"We think people will start to use Web application servers when they start to get into some relatively complex database integration," said Evan Quinn, an analyst at IDC. "If you have a very important Web application that requires [around-the-clock] management and has some high content and transactional complexity, that's when the concept of a Web application server begins to make sense."

Application servers now tend to focus on distinct strengths. For instance, SilverStream, which just released Version 2.0 of its product, is noted for its attractive development environment. WebLogic, Inc.'s strength is its Web application engine, Novera Software, Inc. is noted for its Common Object Request Broker Architecture support and Netscape Communications Corp.'s application server (acquired from Kiva Software, Inc.) does well in collaborative interoperability, Quinn said.

IBM's WebSphere application server, due this month, is expected to emphasize its legacy interoperability features and Java support, and Sun Microsystems, Inc. is expected to throw its hat into the ring with a Java-focused product.

But some smaller vendors have gotten a jump on the big guys. NetDynamics, Inc. — the market leader, according to Quinn — has released Version 4.1 of its self-named product. It features a Java object framework, new application integration capabilities and improved scalability and management.

"With each version of NetDynamics that comes out, we're saving six months of time," said Ron Engle, a senior systems integration engineer at NationsBank Corp.'s global finance division in Chicago. His group started using NetDynamics in January 1996.

NationsBank quickly created a telephone directory and stock-watch application for internal use, then built a bigger application to give corporate customers an easier way to manage their accounts. With a browser-based system, NationsBank no longer has to worry about software updates and support.

Using NetDynamics to create the applications reduces the amount of code the information systems team has to write, provides a persistence engine that can determine user access rights and provides an event model that helps generate pages dynamically, Engle said. □

NEW PRODUCTS

NATRIFICIAL TECHNOLOGIES has announced The Brain 1.5, software that enables users without a corporate World Wide Web site to share information over the Internet.

According to the Santa Monica, Calif., company, the Windows-based software lets users integrate all of their files and Web pages into a single structure called a Brain.

A Brain provides access to content, regardless of the content's source. Published Brains are hosted on Natrificial's server, are accessible to any authorized user with a Web browser and can be embedded in Web pages and E-mail messages.

The Brain costs $49.95 per seat.

Natrificial Software Technologies
(310) 656-8484
www.thebrain.com

CENTURA SOFTWARE CORP. has announced Net.db 1.1.1, a World Wide Web-based tool for publishing and accessing relational databases via the Internet.

According to the Menlo Park, Calif., company, the code-free tool has a browser-based environment for Web developers to both design and deploy Web applications. It reads database catalogs and automatically creates Hypertext Markup Language-based views and links for each table. No knowledge of database languages is required.

Database content can be navigated, updated and published within any popular browser.

Net.db 1.1.1 costs $395 for a two-user developer edition.

Centura Software
(650) 321-9500
www.centurasoft.com

MUSTANG SOFTWARE, INC. has announced Web Essentials ListCaster Version 2.0, Windows NT software that combines a mailing list server with an E-mail server.

According to the Bakersfield, Calif., company, the software speeds the creation and management of custom Internet mailing lists. New features include the ability to prune subscribers with nonvalid E-mail addresses and a subscription confirmation system that prevents users from subscribing others to a list without permission. The Simple Mail Transfer Protocol/Post Office Protocol E-mail server has added support for alias E-mail addresses.

The product costs $499.

Mustang Software
(805) 873-2500
www.mustang.com

ELOQUENT, INC. has announced Presenter Server 3.1, a World Wide Web-based streaming data server for on-demand multimedia business and training presentations.

According to the San Mateo, Calif., company, users can access presentations in a Presenter library using standard Web browsers, and managers can query the server database by user, date range or content to assess usage patterns.

Version 3.1 supports a new audio coder/decoder for higher quality voice over 28K and 56K bit/sec. modems. And transmissions can now pass as normal Hypertext Transfer Protocol traffic to penetrate most corporate firewalls.

The server costs $30,000 for a 20-concurrent-user license. Additional concurrent users can be added for $1,500 per user.

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uh-huh

yep

ok

wouldn't recommend it

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BUSINESS IMAGING SYSTEMS

Kodak

Yahoo holds Web traffic crown for May

By Tom Diederich

YAHOO, INC., America Online, Inc. and Netscape Communications Corp. were May's most-visited Internet sites, according to a research firm that tracks World Wide Web traffic.

Yahoo, in Santa Clara, Calif., logged the most visits, at 30.6 million, followed by Dulles, Va.-based America Online, at 22.8 million, and Mountain View, Calif.-based Netscape, at 18.9 million, according to RelevantKnowledge, Inc.

Yahoo's chief Web portal rivals — Excite, Inc., Lycos, Inc. and Infoseek Corp. — were left in the dust, according to the research firm's findings. Excite, in Redwood City, Calif., came closest, with 15.9 million visits. Santa Clara, Calif.-based Infoseek had 12.7 million visits, and Waltham, Mass.-based Lycos had 10 million, according to Atlanta-based RelevantKnowledge.

Mike Bernstein, an analyst at Gartner Group, Inc. in Stamford, Conn., attributed Yahoo's lead to the company's successful cross-channel marketing campaigns, which he said have made the company a "household name [among the] less 'net-savvy crowd."

"Yahoo has taken very aggressive steps to lead the market," Bernstein said. "And success breeds success. As soon as they do one thing, their stock goes up, which generates more attention and more money, which in turn allows them to do the next aggressive thing." □

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Web is wrong for some firms

CONTINUED FROM PAGE 41

involved than simply gaining access with a Web browser.

Fleet Credit Card Services in Horsham, Pa., is piloting a program to let customers apply for an increase in their credit line over the Internet. Using software from Pegasystems, Inc. in Cambridge, Mass., the company has tied its customer service system to its back-end workflow systems. But to use the application, cardholders need relatively recent versions of either Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer Web browsers that support the Secure Sockets Layer security protocol, according to Joan Jennerjahn, director of business systems.

Another health care company, Wellmark Blue Cross and Blue Shield in Des Moines, Iowa, recently installed a document management system from IntraNet Solutions, Inc. in Eden Prairie, Minn. It makes available on the company's intranet about 30 manuals used by customer service representatives and others. The company expects to save big on printing and would like to make the information available to customers, too, according to Doug Whicker, project leader for electronic commerce at Wellmark.

"But it's hard to know how many people are willing to jump on the Internet to get information," Whicker said. Many of Wellmark's customers are on Medicare. "I would imagine they would prefer to speak to a live person rather than interact with a personal computer," he said. □

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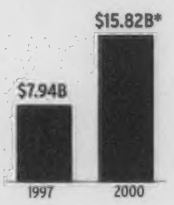
Briefs

LAN hardware market for midsize businesses



Base: 202 companies with 100 to 1,000 employees

*Projected

Source: Infonetics Research, Inc., San Jose, Calif.

Bandwidth on the Web

Internet Devices, Inc. in Sunnyvale, Calif., last week announced it is shipping an add-on to its Fort Knox Policy Router that enables information systems managers to have World Wide Web-based, point-and-click control of bandwidth policies for IP services, groups of users or networks. The Bandwidth Manager add-on costs $4,995.

New Cisco routers

Cisco Systems, Inc. last week announced a five-slot Catalyst 8510 and 13-slot Catalyst 8540 Asynchronous Transfer Mode switch router. Pricing for the 8510 starts at $27,500. The switch can handle 6 million packets per second. Pricing for the 8540 starts at $59,000 and can handle up to 24 million packets per second. The San Jose, Calif., vendor will ship both products in the fourth quarter.

GROUPS GROW

Worldwide market for groupware software

*Projected

Source: International Data Corp., Framingham, Mass.

IBM reconciles with Ethernet

▸ *But some say move to mainstream is too late*

By Bob Wallace

IBM, THE LONGTIME Token Ring and ATM bigot, recently moved into the networking mainstream with a raft of new, homegrown Ethernet switches and hubs that offer customers greater technology choices.

NETWORK STANDARDS

Perhaps realizing that countless Token Ring users are moving to Ethernet networks [CW, May 4] and that using Asynchronous Transfer Mode (ATM) to link desktops is on life support, IBM has decided to build a greater Ethernet portfolio.

But for one IBM user, the move is too little, too late.

"Had they done this in 1995, we would have evaluated their products [because] we were just starting to install Ethernet," said John Bonkowski, network research and development manager at United Parcel Service of America, Inc. in Mahwah, N.J. "It may have made a difference, but we decided to go with 3Com, which is very strong in the Ethernet market."

IBM finally woke up and smelled the coffee, one analyst said.

"IBM is doing this because networking as we know it is Ethernet now," said Maribel Lopez, an analyst at Forrester Research, Inc. in Cambridge, Mass. "And everyone wants Ethernet switches because they're fast and cheap. From a vendor perspective, if you want to sell product, you've got to sell Ethernet" (see chart).

One large IBM Token Ring shop wasn't surprised by news of IBM's increased emphasis on Ethernet products.

"I feel like it was inevitable, since so many other vendors are pushing things like Ethernet adapter cards with their PCs," said David Paul McGhee, manager of network support at retailer Dillard's, Inc. in Little Rock, Ark.

The company uses Token Ring to link 1,500 nodes at its far-flung locations and doesn't plan to use Ethernet products. But McGhee said he isn't concerned about IBM's push into

IBM, page 52

Ethernet is where the money is

1997 worldwide sales*

Ethernet	$12.4B
Token Ring	$1.8B

* Adapters, hubs and switches

Source: International Data Corp., Framingham, Mass.

Molson makes PC choices a lot simpler

By Michael MacMillan
TORONTO

LOOKING AT his company's desktop infrastructure, Trevor Smith is satisfied he is headed in the right direction — even if there is still some distance left to travel.

That's because Smith, vice president of information technology at Molson Breweries in Toronto, is tackling the shortcomings in his company's PC and laptop operating systems.

The problems haven't been technical issues as much as age and complexity. According to Smith, there is a "pretty heavy mix" of Windows 3.1 and 3.11 in the operating systems currently sitting on the brewery's roughly 2,000 PCs. He said he would like to see them updated for a variety of reasons.

"We wanted more standardization," Smith explained. "We also wanted compliance from a software licensing point of view, more expense control and more discounts. It's minimizing [total cost of ownership], minimizing our support and training, and simplifying administration."

Also, once the new operating

Molson, page 51

REVIEW▸ *Open Software Associates' NetDeploy*

App installer weak on Windows

By David Strom

WHEN I FIRST tested Open Software Associates Ltd.'s latest version of NetDeploy, a network-based software installer, I thought it held lots of promise for enterprise managers trying to automate their software distribution. But as I worked with it, I found it has a major weakness that many managers won't accept.

Although NetDeploy can save information systems managers a lot of time, it doesn't work well with all applications. It is especially troublesome with commercial software, such as those from Microsoft Corp. and Lotus Development Corp.

NetDeploy's biggest weakness is that it doesn't keep track of Windows settings.

But Version 3.0 has some significant improvements, too. It is now integrated with Release Software Corp.'s Sales Agent technology. So you can set up your package as a trial version and then buy the software after 30 days if you like it.

NetDeploy also supports a new file format, called Open Software Description, designed for software installation files. It has been submitted to, but not approved by, the World Wide Web Consortium.

NetDeploy comes in two pieces. One is Packer, used by the application provider or network administrator to create a distribution package. The other is Launcher, used by end users to install software on their machines.

NetDeploy's biggest weakness is that it doesn't keep track of all the various Windows settings that are required to install an application properly.

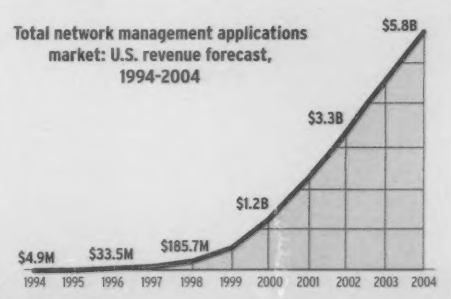
Even if registry entries aren't as frequently used by homegrown applications (typically made up of one or two executable programs and a small number of files), the thought of users keeping track of them is unappealing, to say the least. And IS staffers already have enough to worry about, so distributing products such as Microsoft's Internet Explorer or Office is almost impossible with NetDeploy.

NetDeploy's competitors — including Lanovation's PictureTaker, Intel Corp.'s LANDesk

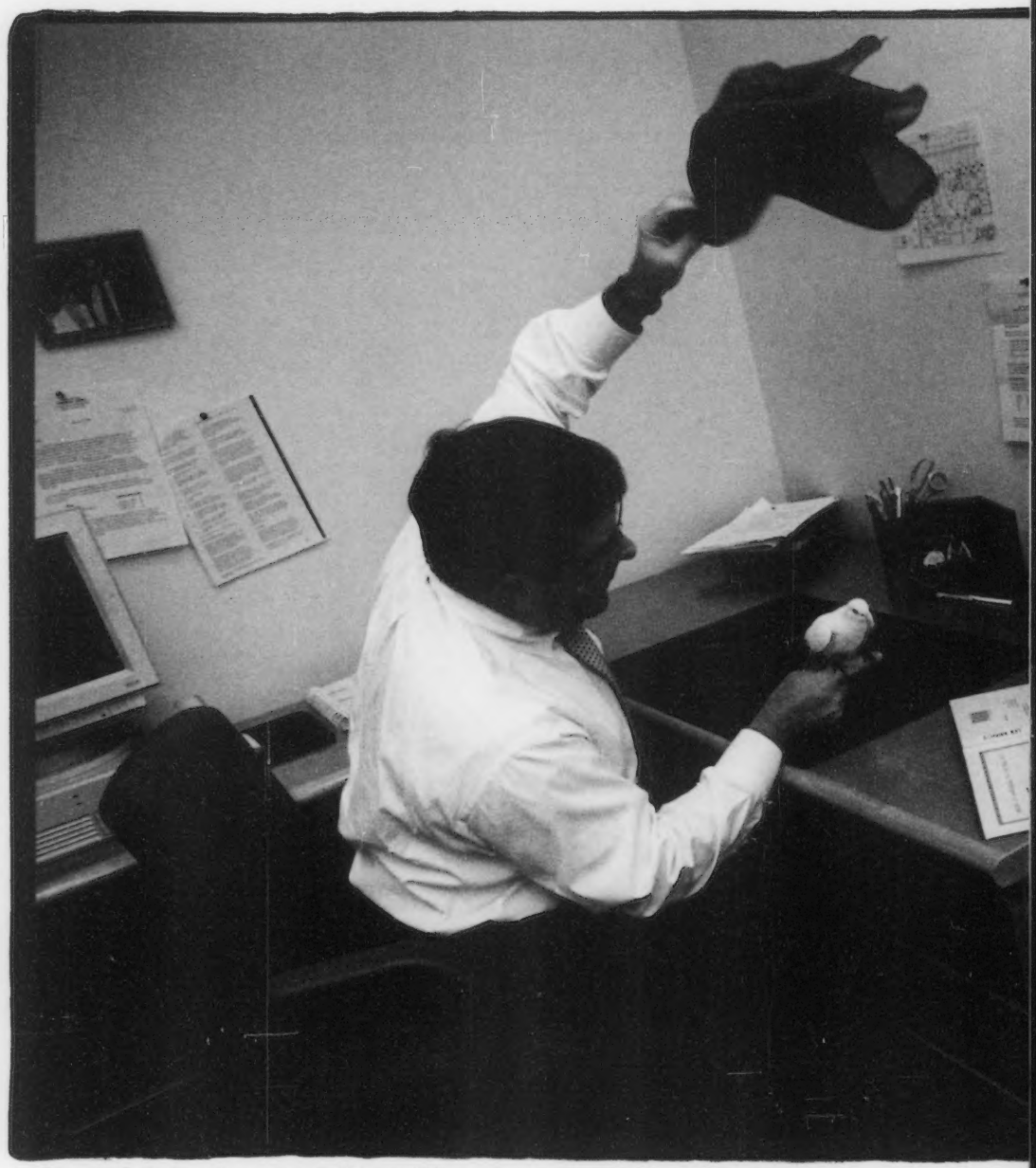
NetDeploy, page 51

Snapshot

Total network management applications market: U.S. revenue forecast, 1994-2004



Source: Frost & Sullivan, New York



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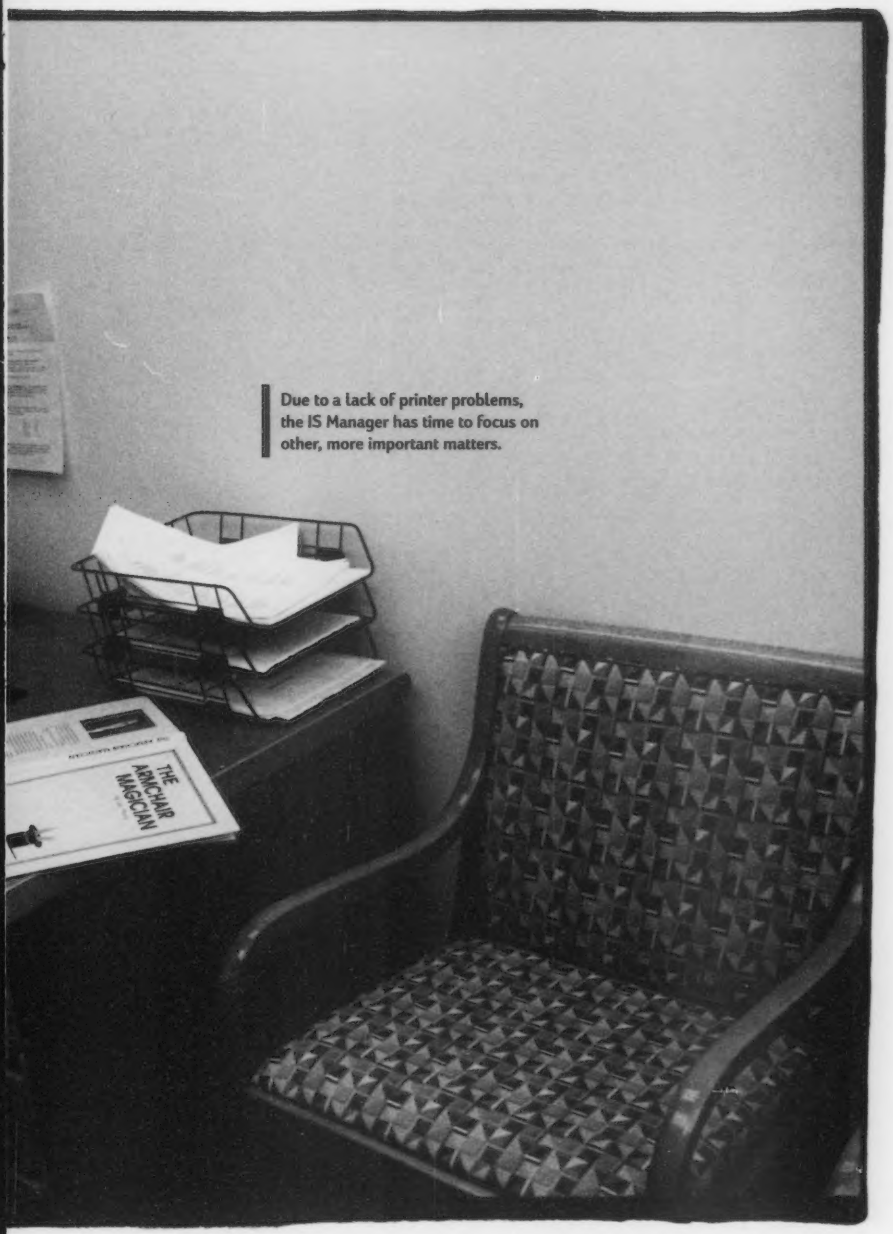

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Molson makes choices simpler

CONTINUED FROM PAGE 47

systems are in place, Molson's employees, customers and suppliers will be able to communicate with one another much more effectively, he said.

And with the year 2000 fast approaching, Smith wants to make sure his company's operating systems are compliant. In fact, the operating system overhaul is part of a much broader plan — also inspired by the year 2000 problem — to adopt a 32-bit desktop architecture, thereby eliminating the 386 and 486 processors running in more than half of Molson's PCs and laptops.

AT A GLANCE:

Molson Breweries, Toronto

Business: Canada's leading brewer, with seven breweries, more than 80 brands of beer and a 46.5% market share in Canada

Employees: 3,900 in Canada

Fiscal 1998 revenue: $2.2B (Canadian)

Fiscal 1998 net income: $143.8M (Canadian)

Smith said selecting the IT vendor was easy. "There have been Microsoft products deployed in Molson's infrastructure for a few years now . . . [and] I don't think there was any question in our minds about whether we'd continue to deploy a Microsoft product. It was just a matter of how best to achieve that," he said.

So Molson and Microsoft Canada Co. quickly negotiated a three-year deal, under which Microsoft will supply the brewer with a variety of products, including Windows NT, Windows 95, Office and BackOffice, plus several server products.

"The agreement . . . [also] allows Molson the ability to upgrade to any version over that period of time, and along with that is a premier support agreement, because deployment is critical to the success of the project," said Gail Thomas-Flynn, director of the enterprise customer unit at Microsoft Canada in Mississauga, Ontario.

Although the project is still in the early stages, Smith said he already knows the biggest challenge facing his team: lack of resources.

"It's a situation of having too much to do in too little time. We have a number of significant projects all on the go at once, and the demand on our existing team is pretty high," he said. "There's just a limit of how much we can do concurrently."

Smith said the "federalist" makeup of his IT department — one large national office working in conjunction with regional IT shops — will also make deployment tricky. Until recently, regional IT offices tended to deliver point products and region-specific applications, usually resulting from regional marketing or sales initiatives. As part of the overall management shift at Molson, those offices will assume some of their own desktop management responsibilities.

That means Smith must make sure everyone carries through with the head office's upgrade schedule. "It's somewhat complicated in that the national office owns the infrastructure, but the desktops are owned by the regions. So we need a lot of cooperation and coordination with the regions to make this all work," he said.

Smith's department is now rolling out NT on desktops and servers. He said he expects to complete that phase by year's end. The goal is to have Windows NT or Windows 95 up and running on Molson's desktops before the year 2000 deadline. But for now, Smith said he is just glad to get going with this phase of Molson's IT overhaul. □

MacMillan writes for Computerworld Canada.

NetDeploy

CONTINUED FROM PAGE 47

and Microsoft Corp.'s System Management Server — don't have this flaw when installing commercial software.

IS managers who want to distribute commercial software packages would be better off using those offerings.

Still, NetDeploy is relatively easy to use. It takes you through a multistep process, called a task list, that lets you choose your application and version number, locate its various files on your hard disk, bundle them into a package and send the package via file transfer protocol to your Web server.

You can add your own splash screen, scan for viruses, and add a link to a text file containing your software license agreement, among other things.

It takes more time to explain it than to do it — that's how easy it is.

I tested both parts of NetDeploy on Windows 95 and NT machines on a small office network.

Open Software Associates also sells versions that run on a wide variety of platforms, including Macintosh, OS/2, several flavors of Unix and Windows 3.1, but I didn't test those.

All in all, if you're deploying non-Windows 95 or NT programs, or Windows 95 or NT programs that you have built yourself, and can collect their various registry and environment entries without a lot of trouble, NetDeploy is a great option for distributing your software. □

Strom is a freelance reviewer in Port Washington, N.Y.

PRODUCT REVIEW

▸ *NetDeploy*

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Mail 'feature' could be a bomb

By Roberta Fusaro

LAST WEEK, the newsletter "BugNet" warned subscribers about a potential "E-mail bomb" in Microsoft Corp.'s Outlook Express. But a Microsoft spokesman said the function isn't a bug, it's a feature. No kidding.

And it isn't much of a threat to most users, he said.

"BugNet" reported that a function built in to Outlook Express 4.7x can automatically break a large piece of E-mail into many smaller pieces and send them all to the same destination for reassembly. Breaking up the files will let users comply with limits some Internet service providers put on the size of the E-mail files they will process. But the feature also gives the product the ability to create mail bombs — shooting thousands of separate E-mail messages at the same electronic in-box.

Theoretically, someone could send a 2G-byte message that could arrive as a flood of 10M-byte pieces into a user's mailbox. "But realistically, things like that don't really happen. For most users, it isn't a concern," the Microsoft spokesman said.

He said Microsoft has so far received no complaints about the mail feature, and Outlook Express has been available since October 1997, bundled with Internet Explorer.

The spokesman said future versions of the product will include a dialog box that warns users about making their document-size settings too small and generating floods of E-mail bits.□

IBM reconciles with Ethernet

CONTINUED FROM PAGE 47

the Ethernet market because IBM's commitment to the Token Ring and ATM markets seems solid.

IBM should have seen the writing on the wall when 100M bit/sec. Fast Ethernet hit the scene in 1993, said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consulting and research firm.

"They defended Token Ring way too long," Nolle said. "It's real easy to support [Ethernet in a] big [way] now."

NOT THE FIRST TIME

Ironically, the new products don't represent IBM's first dealings with Ethernet.

IBM resold Ethernet switches from technology pioneer Kalpana, Inc. and even had a chance to buy the start-up in 1994. But Cisco Systems, Inc. scooped up the promising company in October 1994, leaving IBM with only one Ethernet switch model of its own.

Cisco bought Kalpana and backed Ethernet heavily even though the Ethernet switches hurt its router sales in the short term, recalled Esmerelda Silva, a program manager at International Data Corp., a consultancy based in Framingham, Mass.

IBM later began reselling switches from start-up Xylan Corp. that could perform many types of switching, including Ethernet. And now that it is clear that Ethernet is where the action is, IBM is pushing Ethernet hard with the new product announcements that will give users moving away from Token Ring a way to stay with IBM.□

NEW PRODUCTS

HEWLETT-PACKARD CO. has announced the HP ProCurve Switch 8000M and the HP ProCurve Switch 1600M, two new Gigabit Ethernet networking switches.

According to the Palo Alto, Calif., company, the switches offer World Wide Web-based management and enable network administrators to take their networks from 10M bit/sec. to 100M bit/sec.

The 8000M provides up to 80 switched 10/100 ports, 10 slots for Gigabit Ethernet connectivity and a 3.8G bit/sec. bandwidth. The 1600M has 16 10/100 ports, one slot for optional gigabit connectivity and a 3.5G bit/sec. bandwidth.

The 8000M costs $3,999, and the 1600M costs $3,199.

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JVC PROFESSIONAL COMPUTER PRODUCTS DIVISION has announced additions to the VIPSLAN-10 wireless Ethernet LAN: S-Satellite, W-Satellite, M-Node and M-Node Card.

According to the Cypress, Calif., company, S-Satellite is a ceiling-mounted transmitter network hub. W-Satellite is a wall-mounted hub. M-Node is a transceiver that connects to a standard Ethernet card or hub and communicates with the satellite hubs via infrared beams. M-Node Card was designed for direct communication between a laptop and satellites. The products offer 10M bit/sec. connectivity.

S-Satellite costs $1,395; W-Satellite costs $965; M-Node costs $615; and M-Node Card costs $795.

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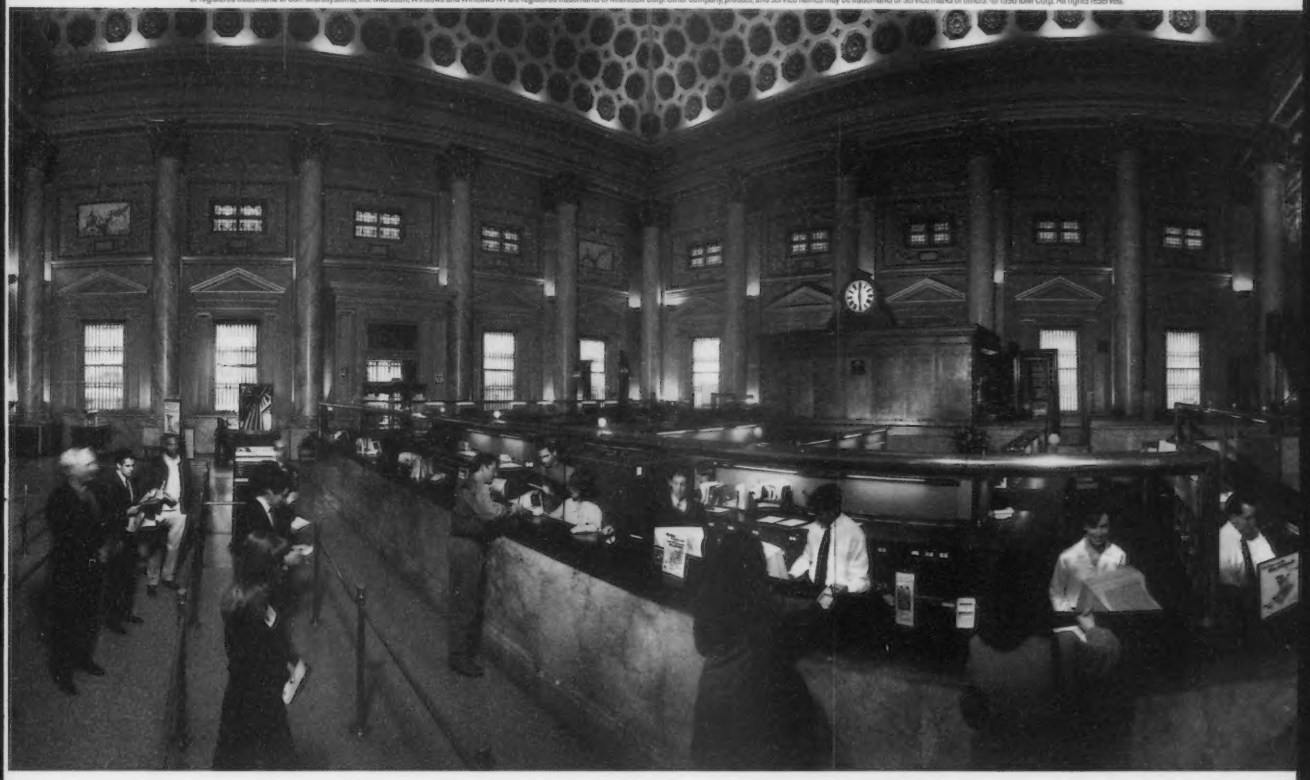

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Briefs

Top factors in application development project failure

Lack of user input	12.8%
Incomplete requirements and specifications	12.3%
Changing requirements and specifications	11.8%
Lack of executive support	7.5%
Other	55.6%

Base: 365 IT executive managers; margin of error +/- 4%

Source: The Standish Group International, Inc., Dennis, Mass.

40% of apps pirated

Four out of 10 applications installed worldwide last year were pirated, according to two software trade associations. A study by the Business Software Alliance and the Software Publishers Association found that out of 574 million software installations, 228 million weren't licensed.

Java CD-ROM ready

Sun Microsystems, Inc. has announced availability of its Java JumpStart CD-ROM package that provides developers with quick access to the latest Java technology. It includes the latest Java Development Kit (JDK), Java Plug-in software, online books, sample code, documentation and a quick update service that lets developers download updates to the JDK 1.1 platform.

EDS health care suite

Electronic Data Systems Corp. in Plano, Texas, has announced MetaVance Payor Portfolio, a software suite for health care companies that includes Administration and Finance, Care Management, and Decision Support modules.

PeopleSoft makes buy

PeopleSoft, Inc. in Pleasanton, Calif., last week announced plans to buy TriMark Technologies, Inc., a Lincolnshire, Ill., maker of packaged applications for life insurance and annuity firms. The stock-swap deal is valued at about $25 million.

Kinder, gentler analysis tools

▸ *Competition focuses on easing data mining*

By Craig Stedman

DATA ANALYSIS

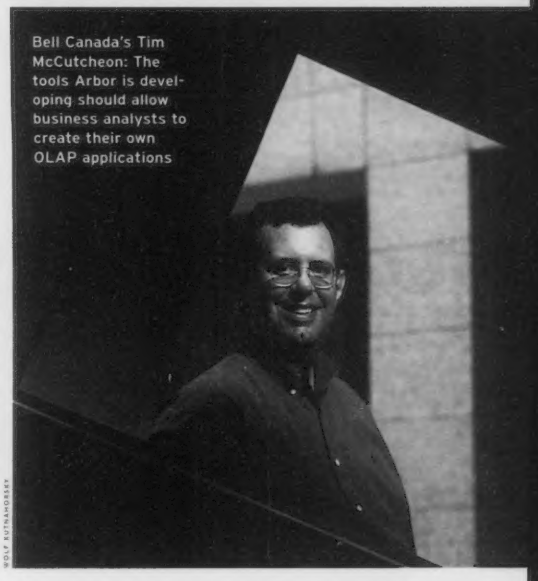
WITH NEW COMPETITION from Microsoft Corp. staring them in the face, data analysis server vendors are rushing to make their software less forbidding for users to deal with.

Online analytical processing (OLAP) announcements made in the past two weeks by Arbor Software Corp., Seagate Technology, Inc. and WhiteLight Systems, Inc. all had a common theme: improved ease of use. And prospective users liked the sound of that.

For example, tools that Arbor is developing should make it possible for business analysts to create their own multidimensional OLAP applications as analysis needs pop up, said Tim McCutcheon, director of finance information management at Bell Canada, Inc. in Toronto.

One-time business events, such as the ice storms that wracked parts of eastern Canada last winter, spur heavy demand from users for analyzing information that isn't already set up in Bell Canada's Arbor-based OLAP databases, McCutcheon said.

But building new analysis models on the fly "is something the analysts could never really do without a lot of training," he said. "And even then, you couldn't be sure they were doing it the right way without investing a lot of our time."



Bell Canada's Tim McCutcheon: The tools Arbor is developing should allow business analysts to create their own OLAP applications

JASON REPKA/IDG

Bell Canada is beta-testing Sunnyvale, Calif.-based Arbor's Integration Server software, which was announced last week and is due to ship in the fall. Priced at $20,000, the tools

Analysis tools, page 56

Visual Studio upgrade faces user scrutiny

By Sharon Gaudin

USERS ARE EAGER to see if upgrades to Microsoft Corp.'s application development tools let them retrieve information from a wide array of databases, as the company claims.

Microsoft announced the update to its Visual Studio tool suite, due in September, a few weeks ago, touting its new and improved ability to access information off disparate databases. Users are hopeful, but wary.

"Microsoft wants to work in the enterprise, and the enterprise includes Oracle and Unix and IBM," said Chris Porch of Innovative Data Solutions in San Diego. "If they want to play there, they have to interoperate with the back ends. I don't know if this is real interoperability, but I think it's the real beginning of it."

Visual Studio includes Visual C++, Visual Basic, Visual J++, Visual FoxPro and Visual Interdev. Visual C++ and Visual Basic are two of the most important tools in the application development realm.

Microsoft announced at its annual Tech Ed conference two weeks ago that Version 6.0 of the separate tools in Visual Studio would support ActiveX Data Objects (ADO), OLE DB, and SNA Server, along with their current support for Open Database Connectivity (ODBC). That

Visual Studio, page 56

Microsoft is moving its application development tools into the enterprise arena by expanding its scope of database access. The Visual Studio tool suite will add support for:

- **ActiveX Data Objects**
- **Database access using OLE**

That should let the Windows client access nonrelational database formats, including:

- **Mainframe formats**
- **Unix formats**
- **Flat files**
- **Message stores**

Gartner service helps users track PC costs

By April Jacobs

Big-ticket items are management, support, downtime and end-user operations.

GARTNER GROUP, INC. is using its experience measuring the total cost of owning a PC to help users understand and measure the costs of distributed computing.

The consulting firm has developed software that allows users to identify the different costs in a typical information technology budget, such as hardware and software management and support, and analyze those costs. Users can then develop a strategy for reducing them where possible. Pricing varies with the level of services provided.

At CVS Corp. in Woonsocket, R.I., business technologist Mark Seligman is looking at what he calls hard, soft and vapor costs. He said he hopes to use the Gartner software and services, dubbed TCO Manager, to develop ways to measure and hopefully reduce those costs.

Seligman, interviewed in Boston at Gartner's recent TCO Forum on total cost of ownership, said the company already has taken some steps to make managing its desktop environment simpler, such as standardizing most of its PCs and operating systems. The company moved to Windows NT 4.0 and Windows 95 from Windows 3.11.

The challenge now is to understand the information tech-

Gartner service, page 56

Financial system makers on fast track

▸ *Study says quick expansion could hurt some*

By Ron Condon
LONDON

A NEW ANALYSIS OF THE world's top-selling corporate financial systems says that suppliers could suffer from trying to expand too quickly in too many directions.

The report, from London-based Ovum Ltd., shows that while SAP AG still holds a dominant lead, most other suppliers are struggling to fulfill all their goals. "It's a case of expansion at all costs in all directions," said Laurent Lachal, a co-author of the research.

The systems covered are Baan Financials from The Baan Co., OneWorld from J. D. Edwards & Co., Oracle Financials from Oracle Corp., PeopleSoft Financials from PeopleSoft, Inc. and SAP's R/3.

SAP seems to be in the best position. The company is also six months ahead of its rivals in preparing for the monetary union in Europe, according to Dennis Keeling, the report's other author.

"Its technology is not the best, but it works," he said.

Baan Financials is criticized for being a "traditional, boring European accounting package" with poor information retrieval features.

PeopleSoft is perceived as weak outside the U.S., and its frequent changes of senior management in Europe were flagged in the report as a cause for concern.

Keeling said OneWorld could be a world-beating system if J. D. Edwards can move from direct sales to selling through resellers.

Oracle won technical praise for its range of products, but Keeling questioned the timing of launching an architecture when companies are dealing with the millennium date change and euro conversion. □

Condon writes for the IDG News Service in the U.K.

MULTIMEDIA

Avid buys Microsoft animation division

By Patrick Thibodeau

WALL STREET LAST WEEK reacted with a big ho-hum to Microsoft Corp.'s decision to sell its Softimage subsidiary for $285 million to computer-based video, film and audio technology developer Avid Technology, Inc.

Microsoft acquired Montreal-based Softimage, a developer of three-dimensional animation and other digital media technologies, in 1994 for $130 million.

"Microsoft decided that the graphics tools and high-end 3-D graphics as a product line was not strategic," said Lou Mazzucchelli, an equity analyst at Gerard Klauer Mattison Co. in New York. "And rather than continue to invest in something that was not strategic . . . they decided to cut it loose," he said. "I don't think it was much more than that."

The sale was announced after the close of markets on June 15. Stock prices for both Microsoft and Tewksbury, Mass.-based Avid showed little reaction in early trading the next day.

The sales agreement between the two companies will be completed by late July, the companies said. □

Gartner service tracks PC costs

CONTINUED FROM PAGE 55

nology costs and develop a methodology for measuring them, Seligman said.

"We have system policies, and we have consolidated our platforms. But when you try to figure out if you have reduced costs, it can be complex because there are variables that go into making changes that make it very difficult along the way," he said.

Gartner's model is based on an average LAN with 500 to 3,000 nodes. The average cost per node, or end user, is about $10,000 per year, or $30,000 over three years. Average spending for a 2,500-user environment is thus $25 million per year.

Users may be surprised to learn that hardware and software acquisition costs typically represent less than $6 million of that total $25 million price tag, or 24%.

THE MONEY PIT

The big-ticket items, according to Gartner analyst Tom Pisello, are management, support, downtime and end-user operations, which account for 41% of the cost. By implementing best practices, organizations can reduce those costs significantly, he said.

Some of those best practices are using help desk automation software; distributing software electronically; using system management tools that allow for capacity planning, backup and recovery; and performing remote monitoring.

The tough part, of course, is adopting methods and developing models that allow users to calculate soft costs, which aren't easily defined.

Gartner's total cost of ownership model is a "well-thought-out approach to the subject of TCO because it takes a very structured methodology and covers all the aspects," Seligman said.

But, he added, "One of the issues companies face is that they aren't necessarily geared toward looking at IT costs that makes identifying sources easy. That is why there is always the issue of general models vs. company specifics." □

Analysis tools

CONTINUED FROM PAGE 55

were designed to automate the movement of analysis data from relational databases to Arbor's Essbase server.

Seagate's software unit and WhiteLight are taking a different ease-of-use path: Each plans to let users link its OLAP server to rival products.

Seagate, in Scotts Valley, Calif., last week released an upgrade of its Holos software that will be able to access data stored in either Essbase or the Plato analysis server that Microsoft is due to ship by year's end. Earlier this month, Palo Alto, Calif.-based WhiteLight announced similar plans to tie its namesake OLAP server to Plato.

Microsoft is the common thread tying together all of the moves, said Robert Craig, a data warehousing analyst at Hurwitz Group, Inc. in Framingham, Mass. With Plato expected to "take over the low end of the OLAP market," he said, other vendors are setting their software up as high-end companions to Plato or trying to emulate Microsoft on ease of use.

Wawa, Inc., a grocery chain in Wawa, Pa., uses Holos to analyze sales issues such as product mix and the effectiveness of promotions. Joe Campbell, decision-support team project leader at Wawa, said he doesn't expect Plato to match the high-end analysis power of Holos.

But Wawa already stores pricing records in Microsoft's SQL Server database, and being able to put them in Plato and then run analysis routines through Holos would save the company from "having to move the data around from server to server," Campbell said.

Also, Holos-trained marketing analysts could tap in to data stored in Plato without having to learn another front-end tool, he added. □

Visual Studio

CONTINUED FROM PAGE 55

means the tools will build applications that can access data not only from relational databases with ODBC, but also from nonrelational database formats, such as mainframes and Unix databases, as well as flat files and message stores.

ADO and OLE DB work together to access nonrelational databases. OLE DB is the electronic bus that transports the information between the client and databases. ADO gives the directions to the electronic bus. But the SNA Server gives the directions to the bus if it is accessing information from a mainframe or minicomputer.

"If this actually works, certainly it would be useful," said Everett Johnson, vice president of application development at Salomon Smith Barney in New York. "Most companies' data runs across a heterogeneous environment, and they need applications that can run all the way through with them. [Microsoft's] group of tools is evolving to do this." □

SHORTS

Modules debut

Atlanta-based SQL Financials International, Inc. has added three new modules to its line of packaged applications, which was renamed Clarus. The new products include procurement software for buying office supplies and other goods via the World Wide Web, a budgeting tool and a self-service human resources module that lets workers sign up for benefits programs on their own. Pricing starts at $25,000 to $50,000 per module, the company said.

Novell wins case

A U.S. appeals court last week upheld a ruling that found a lawsuit against Novell, Inc. to be without merit. Action Technologies, Inc. (ATI) had sued Provo, Utah-based Novell, Inc., claiming that Novell's GroupWise messaging software copied an ATI software patent for managing tasks and scheduling. The Court of Appeals for the Federal Circuit upheld a 1995 ruling that found a patent by Alameda, Calif.-based workflow vendor ATI to be invalid. A district judge had earlier determined that the patent was invalid, and ATI appealed.

Management pack

Pacific Edge Software has announced Project Office, client/server project management software that integrates with Microsoft Corp.'s Microsoft Project 98.

The software can share the same databases as Microsoft Project but was designed for inexperienced users.

A five-user license is $4,900, and a 10-user license costs $9,500.

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NEW PRODUCTS

NOVASTOR CORP. has announced NovaNet 7 Enterprise, network backup software for Windows NT and NetWare.

According to the Simi Valley, Calif., company, the software provides backup and recovery for both NT and NetWare in one application.

It works with any tape drive device distributed on the network and enables simultaneous data transfer from a single backup job to multiple backup devices. Database backup agents aren't included.

NovaNet 7 Enterprise costs $1,599 for one server and unlimited managed servers and workstations.

NovaStor
(805) 579-6700
www.novastor.com

METAMATA, INC. has announced four components in a suite of Java application development tools.

According to the Fremont, Calif., company, the tools work with any Java 1.1 source code. Metamata Browse is a browser for source code viewing. Metamata Debug combines a Java command-line interpreter with a large-scale application debugger. Metamata Audit evaluates programming errors against standard Java coding practices. And Metamata Metrics can calculate object-oriented metrics.

Pricing is $95 for Browse, $250 for Debug, $395 for Audit and from $500 to $995 for Metrics.

Metamata
(510) 796-0915
www.metamata.com

DATA FELLOWS has announced F-Secure FileCrypto, software that provides encryption for confidential data in Windows 95, Windows 98 and Windows NT 4.0 environments.

According to the San Jose, Calif., company, the software is centrally installed and managed over the network, follows administrator-defined security policies and can automatically encrypt all open and temporary files. The software also offers a self-extracting E-mail attachment feature that lets users send encrypted E-mail to other users.

Pricing begins at $99 per license.

Data Fellows
(408) 938-6700
www.datafellows.com

SALFORD SYSTEMS, INC. has announced CART, data mining and discrete-choice modeling software.

According to the San Diego company, the decision-tree software helps users discover patterns, trends and relationships within large, complex data warehouses. It can be used to predict models for applications such as profiling best customers, targeting direct mailings, detecting fraud and managing credit risk.

Unix and Windows NT server site licenses range from $2,500 to $25,000.

Salford Systems
(619) 543-8880
www.salford-systems.com

QUESTAR INFOCOMM has announced CompStar Employee Quest, employee selection software for human resources departments.

According to the Salt Lake City company, the customizable software tracks employee selection and stores applicant information such as education and work history. It can outline the required skills for specific jobs, provide a database of possible interview questions and calculate section and overall rating scores.

CompStar Employee Quest costs $1,995 per user.

Questar InfoComm
(888) 266-7782
www.questarinfo.com/compstar

June 29

Global Innovators

With the Year 2000 hopefully under control, multinationals are now turning their attention to the ultimate millennium challenge: revamping systems and business processes to accommodate the new unified euro currency, which begins its 11-country, three-step phase-in on Jan. 1, 1999. But it's easier said than done. Organizations have to first enable financial and accounting systems to triangulate between existing European border and the euro (through Jan 1, 2002) while at the same time alter business processes to handle the new currency. All this means installing new software or combing through layers of Cobol and other languages to identify fields which relate to currency processing. In all, Gartner Group ballparks the costs at anywhere from $150 billion to $400 billion.

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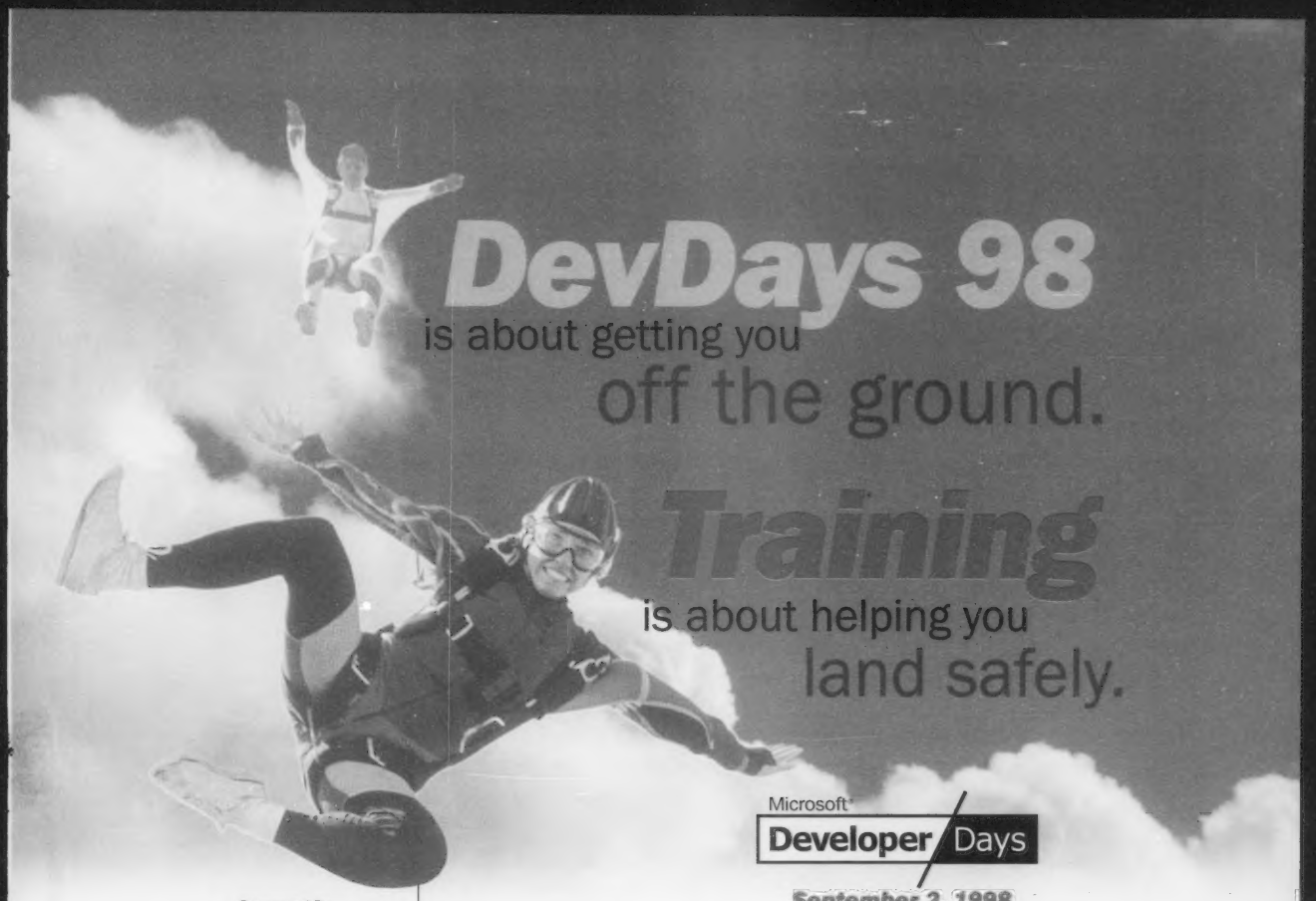

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- New Dell Products Powered by These Technologies
- Direct Service
- Solutions Built on Leading Network Applications

11:00-12:00
Solution Sessions
Decide which educational session suits your business (select one)
- Making Better Decisions using Oracle Applications (Datamarts)
- Streamlining a Business with the Internet and E-Commerce

LOCATIONS

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22	Marriott Sea-Tac, Seattle, WA
24	Hotel Sofitel, Redwood City, CA
26	Airport Renaissance, Los Angeles, CA
29	Renaissance Dallas, Dallas, TX

JULY

01	Detroit Troy Marriott, Detroit, MI
07	Hyatt Regency O-Hare, Rosemont, IL
08	Grand Hyatt, New York, NY
10	Capital Hilton, Washington DC
13	Westin Waltham, Waltham, MA
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IT Requirements for the Wired Marketplace

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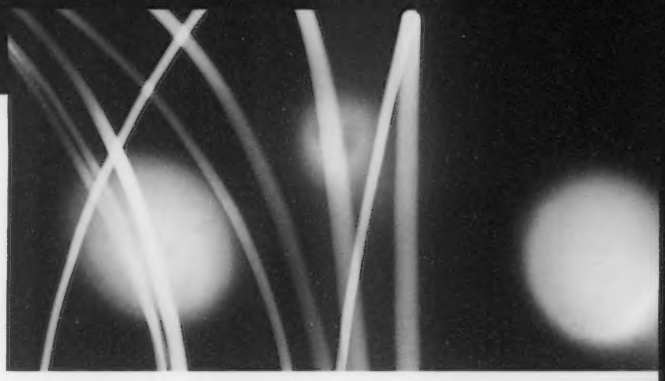
Transactions in the Age of the Consumer



Next Stop: the Wired Marketplace

As organizations deploy Web-based applications, IT managers grapple with the ensuing issues

BY DAN KUSNETZKY
Director, Operating Environment and Serverware Programs, IDC
JEAN S. BOZMAN
Research Manager, Server Operating Environments, IDC

The growth of the World Wide Web is an indication that we are entering the third wave of computing. The first wave began in the 1970s, with the emergence of computers that helped automate back-office operations such as accounting and inventory management. In the 1980s, we witnessed the second wave, with computers that automated front-office operations and supported personal productivity applications on the desktop. This same wave also led to the appearance of client/server computing in the late 1980s.

The third wave of computing, which is about to hit, is the wired marketplace. This will be a world of Internet-enabled business applications and an electronically connected supply chain. Organizations need to start considering right now how they are going to take part in this new marketplace, and how they can adapt their existing client/server systems to deliver data to all the Internet-enabled applications that will proliferate.

This supplement will focus on the IT requirements and issues that this new wired marketplace is creating.

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Three waves of computing

Each of the three waves of computing targeted different business requirements. The first wave took aim at organizational efficiency, with back-office functions being automated. For the second wave, it was individual productivity, as front-office, field sales and field support functions were automated.

The targets of the third wave will be customer service and electronic commerce. Vendors will be able to reach out to their customers and partners, linking with them more effectively than ever before through electronic connections.

Each new wave introduced computing to increasingly larger audiences. During the first wave, tens of millions of people used computers. Hundreds of millions used them during the second wave. In the third wave of computing, IDC predicts that the number of users will be in the billions. But this explosion in the user population will create problems pertaining to network availability.

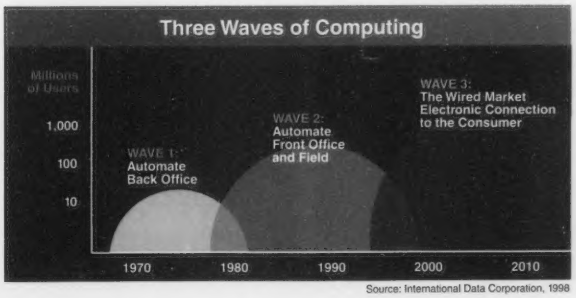
Leveraging existing resources

During the first two waves, most organizations evolved by adding new computer systems that could communicate back to their installed systems. For example, IT organizations expected back-office solutions based on mainframe functionality to communicate with front-office solutions that ran on distributed servers. At the same time, these front-office solutions were expected to interoperate with the mobile and handheld computers used by remote sales and support reps.

It's no different in the third wave. Organizations reaching out to the new wired marketplace via the Web expect all their new software solutions and new computer devices, such as PDAs, to be able to communicate with the desktop PCs and network computers in the offices of their partners and customers, as well as the home PCs of consumers.

But for IT managers, the wired marketplace poses several critical questions. How can this sort of Internet-enabled functionality be implemented? At what cost? Can existing IT resources and computing systems be leveraged, once

In the third wave of computing, IDC predicts that the number of users will be in the billions. But this explosion in the user population will create problems pertaining to network availability.



Source: International Data Corporation, 1998

Because it can leverage the existing components of a company's IT infrastructure, an end-to-end solution is able to provide new levels of functionality without requiring the replacement or overhaul of computer systems purchased over many years.

again, and applied to this new business paradigm?

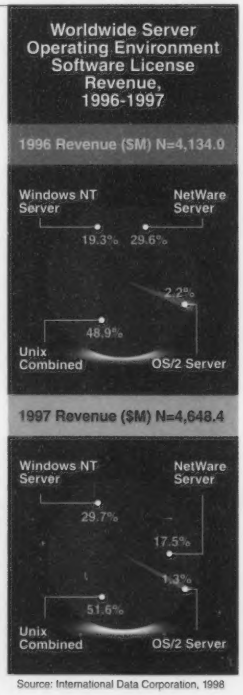
While the first two questions require answers that cannot be answered in a single supplement, the answer to the last question is "Yes." Customers are starting to create end-to-end solutions that link Web-enabled front-end systems to legacy mainframe and client/server back-end systems.

One of these end-to-end solutions might string together the operating system, the middleware and serverware that supports computing on networked application servers and database servers, and the database and applications that run on the back-end server in the corporate data center. So although the total solution would leverage hardware and software elements from multiple servers, these elements would appear as a single seamless resource to users who access data over the Web.

An end-to-end solution such as this would need to be flexible, so that IT could adapt the software to changing business conditions. Fortunately, this building-block style of layered system software lends itself to rearrangement and updating. Because it can leverage the existing components of a company's IT infrastructure, an end-to-end solution is able to provide new levels of functionality without requiring the replacement or overhaul of computer systems purchased over many years.

Helping to speed the development of these flexible end-to-end solutions is the emergence of what IDC terms vendor ecosystems. A vendor ecosystem refers to the web of partnerships surrounding major systems vendors that allows customers to obtain hardware and software platforms, middleware, databases and applications in a single purchase coordinated by the systems vendor. Service, support and design expertise may also be provided as part of the purchase by the systems vendor, its service partners or by allied consulting organizations and system integrators.

IDC analyzes a number of operating systems, all of which are part of the wired marketplace. The chart to the right displays revenues for four operating systems. Although unit volumes of Unix operating systems are less than for NT Server and NetWare, in 1997 investment in all Unix operating systems was nearly twice that spent for NT Server operating system software.



Source: International Data Corporation, 1998

Availability and access

In the wired marketplace, the boom in the number of computer users will

present problems when it comes time for IT to guarantee availability of the new applications while ensuring that users who have little or no experience with the system interface can easily access these applications.

No historical computing model has truly provided the scalability, reliability, ease of use, ease of management or ease of development that the wired marketplace requires. However, there is one technology that has met these criteria while supporting a user base of the same magnitude as that for the wired marketplace. That technology is the telephone.

It takes only seconds for a typical person to learn how to use a phone. As the telecommunications provider adds new services, the user is not required to upgrade their phone; the services are provided by the network. The reliability of the systems that make up the telephone network ensures that users will get a dial tone 99.999% of the time. (It is estimated that downtime on the telephone network averages about five minutes per year.)

The level of computer system availability has started to approach the reliability of the phone network. Many vendors now guarantee their users specific levels of uptime over the course of a year—and agree to pay fees if those levels are not met. Some vendors promise uptime levels of 99.9% or higher.

Dial tone equivalent

But to truly achieve the equivalent of the constant dial tone of the telephone network, computer systems vendors will have to build systems with higher availability and higher performance, which are more scalable, more reliable, more secure, more interoperable and easier to use than the systems of today. Otherwise, access to applications and data will be interrupted so often that electronic commerce will be hampered.

Organizations must consider all these factors—reliability, availability, scalability, security, interoperability, performance and ease of use—when building systems for this new marketplace. In all these areas, except for easy-to-use interfaces, Unix systems are at the head of the class. They have robust high-availability software packages, scale higher than any other server operating environment and score very high in most benchmarking tests for on-line transaction processing (OLTP) and database performance.

Modern Unix operating systems are well-positioned to support the high levels of performance and availability required by the wired marketplace. They can support 64-bit data warehouses, 32- and 64-bit applications, Internet standards and Java technology. They scale up to 16 or more processors per server. They offer interoperability with Windows, NetWare, NT Server, browser-based devices and mainframes—all of which will provide data to the wired marketplace.

(There is also a growing need for interoperability with component-oriented technologies such as CORBA and COM distributed services. But Unix system vendors are opting to build or buy these pieces of connectivity soft-

Internet GUIs

Systems vendors are currently working on Internet devices as extensions to the current crop of Internet clients and Internet servers. These consumer products, which will include Web telephones and WebTV devices, will provide built-in Internet connectivity and will play key roles in the wired marketplace.

This next generation of Internet appliances will also incorporate a new type of user interface, a more intuitive GUI that will do away with the dialog boxes and drag-and-drop paradigm that are so prevalent today. Such ease of use will be essential, because the greater number of users of computer devices will mean a greater number of users who are inexperienced and unsophisticated.

Internet devices that can provide access to the wired marketplace will in time be everywhere. This new interface will enable users to start using the Internet devices right away, with little or no training.

Because it can leverage the existing components of a company's IT infrastructure, an end-to-end solution is able to provide new levels of functionality without requiring the replacement or overhaul of computer systems purchased over many years.

again, and applied to this new business paradigm?

While the first two questions require answers that cannot be answered in a single supplement, the answer to the last question is "Yes." Customers are starting to create end-to-end solutions that link Web-enabled front-end systems to legacy mainframe and client/server back-end systems.

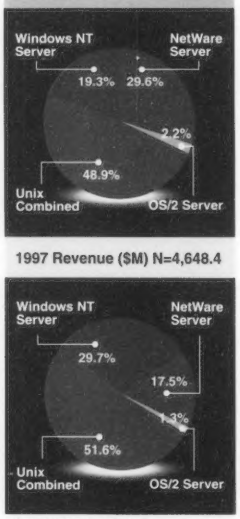
One of these end-to-end solutions might string together the operating system, the middleware and serverware that supports computing on networked application servers and database servers, and the database and applications that run on the back-end server in the corporate data center. So although the total solution would leverage hardware and software elements from multiple servers, these elements would appear as a single seamless resource to users who access data over the Web.

An end-to-end solution such as this would need to be flexible, so that IT could adapt the software to changing business conditions. Fortunately, this building-block style of layered system software lends itself to rearrangement and updating. Because it can leverage the existing components of a company's IT infrastructure, an end-to-end solution is able to provide new levels of functionality without requiring the replacement or overhaul of computer systems purchased over many years.

Helping to speed the development of these flexible end-to-end solutions is the emergence of what IDC terms vendor ecosystems. A vendor ecosystem refers to the web of partnerships surrounding major systems vendors that allows customers to obtain hardware and software platforms, middleware, databases and applications in a single purchase coordinated by the systems vendor. Service, support and design expertise may also be provided as part of the purchase by the systems vendor, its service partners or by allied consulting organizations and system integrators.

IDC analyzes a number of operating systems, all of which are part of the wired marketplace. The chart to the right displays revenues for four operating systems. Although unit volumes of Unix operating systems are less than for NT Server and NetWare, in 1997 investment in all Unix operating systems was nearly twice that spent for NT Server operating system software.

Worldwide Server Operating Environment Software License Revenue, 1996-1997



Source: International Data Corporation, 1998

Availability and access

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Internet devices that can provide access to the wired marketplace will in time be everywhere. This new interface will enable users to start using the Internet devices right away, with little or no training.

To succeed in the wired marketplace, an organization must be able to respond rapidly to a changing environment and be dedicated to making the user's experience not just useful, but entertaining and engaging as well.

ware. By the year 2000, COM and CORBA plumbing issues will largely be hidden from users and IT managers.)

Another feature of Unix technology that is currently helping managers achieve levels of higher availability is clustering. This technology is more varied and scalable than for the NT Server environment. Systems administration in the Unix environment is also more flexible than for NT Server, allowing IT managers to add or delete application servers, database servers or Web servers from a single software cluster. This can help IT managers meet guarantees of uptime to users; if a particular server should fail, its workload can be shifted to other servers which are attached to the same cluster.

Due to the strong standing of Unix as an entry server for Web-based applications, a midrange server for OLTP applications and database applications, and a large server for use in the data center, IDC believes the operating system will continue to play a primary role in the IT arena beyond the year 2000.

Conclusion

To succeed in the wired marketplace, an organization must be able to respond rapidly to a changing environment and be dedicated to making the user's experience not just useful, but entertaining and engaging as well. Companies entering the wired marketplace must take several factors into consideration:

- Does the vendor play well with other vendors? Does the vendor ecosystem offer a full portfolio of Web-enabled applications, tools, databases and both systems and network management environments?
- Does the vendor offer all the services needed to design, implement and manage these new end-to-end Web-enabled solutions?
- Does the vendor guarantee uptime?

Major vendors that have stepped up to the challenge of the wired marketplace include Data General, Digital Equipment, Hewlett-Packard, IBM, NCR, Sun Microsystems and Unisys. IDC considers each one to be the center of an ecosystem of software and services which can be offered along with the vendor's server platform.

Systems vendors with large portfolios of applications will be best positioned to handle the many user requirements which are involved in delivering data and network services to the wired marketplace. IT managers who plan carefully and who execute their plans wisely can not only avoid startup problems, but will also have the advantage of being able to select flexible and manageable approaches for the future.

ABOUT THE AUTHORS

Daniel Kusnetzky researches and analyzes the market for desktop and server environments, and the fabric of distributed computing software which ties them together (serverware). He is located in IDC's Framingham, Mass., office. Jean S. Bozman researches and analyzes server operating systems, including Unix, and tracks the capabilities of competing operating systems from IDC's Mountain View, Calif., office. She joined IDC in 1996 after nine years of writing and reporting for Computerworld.

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Users Look to Sun for WebTone Solutions

BY DAVID WATTS

Throughout the 20th century, the universality of the telephone dial tone has been an essential part of doing business. While it still plays a crucial role as the millennium approaches, every day more organizations are making the Internet the linchpin of doing business. The Internet gives them the capabilities not only to run their day-to-day operations, but also to make their foray into electronic business.

When business moved from paper to electronic files, it required lots of computing power. But in the wired marketplace, the rules are different. Electronic business demands not just computing power, but computing flexibility. It requires heretofore unachievable levels of ease of use, ease of management, scalability, reliability and ease of development. It needs continuous, uninterrupted information services that are easy to access. In short, it needs the 21st century equivalent of dial tone, something that will facilitate information flow across a multitude of devices. It will need WebTone.

But WebTone will be much harder to provide than a dial tone, because there are more criteria for it. WebTone must be:

- reliable enough to allow an organization to provide products and services to its customers with the utmost dependability
- accessible enough to ensure information flow between all computer systems and devices, regardless of operating environment
- safe enough to provide a secure environment for transactions and data exchange involving sensitive information
- fast enough to handle the most intensive computing tasks without compromising the need for timely information within the organization
- expandable enough to handle the increase in network traffic and data storage created by integrating employees, cus-

tomers and suppliers into a common infrastructure

- easy to use enough so that the focus is on running the business, not on setting up the systems to run the business

A key component of WebTone is the Solaris operating environment from Sun Microsystems. Sun, the company that built the backbone of the Internet, has optimized Solaris for Web-based computing.

The Solaris operating environment is the perfect foundation for WebTone. Because it's not proprietary, it can be used by all devices on the network, from smart cards to single-processor systems to 64-processor supercomputers. (Built-in interconnectivity technology, called SunLink, allows Solaris to play with PCs, Macintoshes or any client.) And as more companies move to Intel processors to manage the bulk of their business, Solaris is moving in that direction also. Sun has announced that Solaris will operate on Intel's forthcoming 64-bit Merced chip. This announcement means that customers will be able to maintain the Intel environment they're used to, while getting the robustness of Solaris.

Solaris offers the Web performance needed to handle the astronomical number of hits that a Web site can get during short spikes of intense activity, such as election night or the premiere of a popular movie release. Web sites without this kind of power will display 'server busy' messages at such times of peak use.

Solaris is also easy to install. The Java application called Solaris Web Start can be used in any browser to install Solaris on a server or computer anywhere on the network, or across the entire network. Solaris Web Start makes it simpler and more cost-effective for IT managers to administer networked environments from systems anywhere on the network.

Solaris also provides comprehensive remote administration tools for managing Solaris servers and intranet environments. Anything the IT manager does at the server console can be done remotely from a PC client over to a standard TCP/IP connection. And since Solaris is a multi-user environment, any script, program or administrative task can be executed over a remote connection. Overall, Solaris is far easier than Windows NT to maintain in a networked environment.

WebTone will make the computer network of tomorrow as reliable as the phone network of today. But the wired marketplace needs more than networks that won't go down. It also needs networks that can be continuously accessed, by not only all of today's desktop computers, network computers and servers, but also the next generation of Internet appliances, including pagers, kiosk displays, ATMs and Web phones.

IT managers want their users to be able to dial up all the resources they need without dialing up complexity. But a proliferation of devices usually means more user interfaces. How will IT managers solve this dilemma? The best way is with Java technology.

For programming, the Java language is particularly good for creating programs from reusable chunks, called objects, that reside in various machines on a network. Writing in the Java language is at least twice as fast as writing in other languages. And Java is also portable. Corporations are already using Java to write enterprise-class applications to run on any computer with an intermediate layer of software called a virtual machine, which now comes with most Web-browser software.

The Java platform is finding its way onto every device in the enterprise—desktop PCs and servers—and some outside the enterprise as well. The Java platform is now available on handhelds, smart cards, cell phones, pagers … even TVs and automobiles.

WEBTONE WILL MAKE the computer network of tomorrow as reliable as the telephone network of today.

Proliferation of the Java platform will be a boon to organizations. Consider the typical retailing operation. POS displays at the store level scan data. The data is backloaded to backroom servers. Then all the customer data is uploaded to a server at headquarters. What retailers need is a way to get all the components of a heterogeneous environment to talk to each other, so as the operation grows, it won't matter which devices are running in store x and store y. For tying multiple systems together, no platform beats Java.

And nothing runs Java better than Web-enhanced Solaris, the first release of the Solaris operating environment with the Java platform built in. Now corporations can use Java to build enterprise-class applications, which in turn will get all the reliability, scalability and performance of Solaris.

Today, the Web-enhanced release of Solaris is helping put companies at the forefront of business information communication and delivery. That's why Sun customers are at the forefront of WebTone adoption.

David Watts is a freelance writer based in Wayland, Mass., who specializes in technology-related topics.

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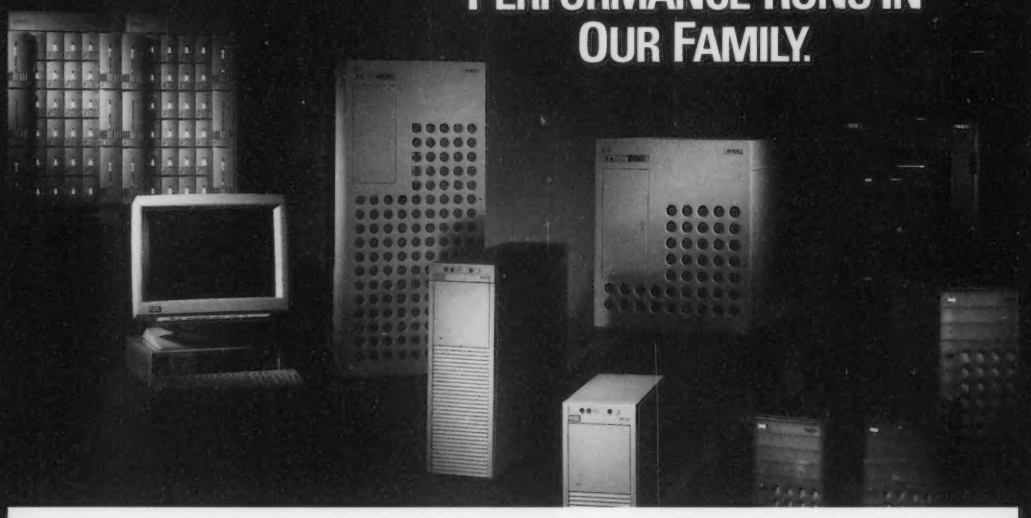

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Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Digital wins appeal

Digital Equipment Corp. last week won an appeal of a verdict that had found the company responsible for making keyboards that workers claimed caused repetitive strain injury.

With that victory, Digital has now triumphed in two of three such cases dating from December 1996. The verdict in the second case was thrown out because a statute of limitations had expired. Digital, now a unit of Compaq Computer Corp., is appealing the third case. The same U.S. District Court in Brooklyn that ruled in Digital's favor last week had ordered it to pay about $5.9 million in three lawsuits in 1996.

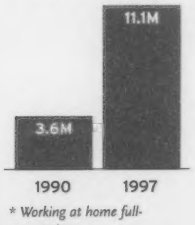
NT backup system

EMC Corp. has announced a new centralized, high-speed, high-capacity backup and restore system for Windows NT data stored on its Symmetrix enterprise storage systems.

The company's recently released EMC Data Manager (EDM) Symmetrix Path option speeds up backup and restore operations by moving stored NT data directly from Symmetrix to an EDM tape backup system instead of moving data via the network. List prices for an EDM configuration start at $150,000.

Telecommuting grows

U.S. telecommuters*



** Working at home full- or part-time*

Source: Cyber Dialogue, New York

Where Sun is brightest: Unix

▸ *Non-Windows strategy pays off, for now*

By Jaikumar Vijayan

WINDOWS NT may be taking over the enterprise computing world, but somebody forgot to tell Sun Microsystems, Inc.

The company is the last major vendor plugging away only on Unix server technology. Every other Unix vendor has started shipping Windows NT systems in addition to their Unix systems.

Sun's reticence to support NT could come back to haunt it. But so far, its Unix-only strategy doesn't seem to have hurt the Menlo Park, Calif.-based vendor, users and analysts said.

Sun's strategy is coming into focus at a time when concerns about NT's reliability and scalability are causing observers to predict that demand for Unix will continue to be strong during the next two or three years at least.

Last year, for instance, shipments of Unix server licenses grew faster than expected — 15.8% — to 717,000 units, according to International Data Corp. in Framingham, Mass. That growth came despite a massive increase in sales of NT server licenses — by 80% — to 1.3 million units.

Worldwide software license shipments by server operating environment

Operating environment	1996	1997
Hewlett-Packard's HP-UX	67,000	79,000
Sun Solaris/SPARC	61,000	78,000
Digital Unix	27,000	33,000
IBM AIX/SP	12,000	17,000

Source: International Data Corp., Framingham, Mass.

"Sun is one company that has consistently said no to Windows NT. . . . They have turned that into their story, and they have run with it successfully," said Joyce Becknell, an analyst at Cahners In-Stat Group in Newton, Mass.

Sun recently announced the sale of its 500th Starfire enterprise Unix server — each of which sold for an average price of $1.2 million. In the past two years, the company has managed to push itself into the top ranks of the Unix server business, in terms of market share, alongside vendors such as Hewlett-Packard Co. and IBM.

Last year, sales of Sun's Unix server licenses grew by more than 27% — well more than the 1.3% recorded by IBM and the 17.9% reported by HP. Sun's single-minded commitment to Unix is at least partly responsible for driving such growth, said Terry Cieslak, chief technology officer at May & Speh, Inc. in Downers Grove, Ill. "It gives them an image of single-minded focus where companies such as HP and IBM are scrambling to fit NT offerings into their product lines," Cieslak said.

May & Speh provides data-

Sun, page 62

IBM WorkPad gets PC-connected

▸ *Infrared port lets users back up data easily*

By Kim Girard
NEW YORK

THAT INFRARED PORT on the back of the IBM WorkPad palmtop device finally has a purpose.

IBM last week announced a software upgrade to its WorkPad palmtop that lets users back up data wirelessly from their WorkPad palmtop to their IBM ThinkPad notebook or infrared-enabled PC.

The WorkPad upgrade replaces the need to use a cradle attached to the notebook or PC for data synchronization

WorkPad is an IBM-branded version of 3Com Corp.'s popular PalmPilot.

The software upgrade, announced here at PC Expo, replaces the need to use a cradle attached to the notebook or PC for data synchronization.

"It's kind of neat because you don't have to carry the cable around," said Rob Enderle, an analyst at Giga Information Group in San Jose, Calif. Infrared support is built in to Windows 98, but IBM has drivers that enable infrared with Windows 95 on the ThinkPads, Enderle said.

"I think it would be handy but somewhat limited," said G. M. Wayne, director of information technology operations at San Rafael, Calif.-based Managed Health Network, a PalmPilot user. Wayne said printing is a handier option for infrared.

The WorkPad infrared software upgrade can be downloaded next month from *www.ibm.com/pc/us/workpad.*

FREE UPGRADE

For newer WorkPad models that run Palm OS 3.0 and have 2M bytes of storage, the upgrade is free. Infrared is a $149 option on older models.

The need for infrared will most likely be phased out next year as an initiative called Bluetooth takes off, Enderle said.

Bluetooth, which is endorsed by Intel Corp. and other vendors, will provide standardized hardware that allows wireless data transfer among devices such as mice and printers. □

Coming soon: $500 PCs with bells and whistles

By Terho Uimonen
TAIPEI

ALREADY AT HISTORIC LOWS, PC prices are set to hit even lower price points in the coming year as microprocessor advances promise to bring better performance to low-cost PCs, officials at chip vendors here predicted.

As microprocessor vendors such as National Semiconductor Corp.'s Cyrix unit and Integrated Device Technology, Inc.'s (IDT) Centaur Technology continue to integrate more functions onto their silicon, users can look forward to sub-$500 PCs before the end of the year and lower still by next year, offi-

CHRISTMAS PRESENT

Some $500 PCs to be released by the holiday season may include:

- MMX chip
- 100-MHz system bus
- 3-D graphics
- 15-in. monitor

Source: Integrated Device Technology, Inc., Santa Clara, Calif.

cials at both companies said.

"The epicenter of this [industry] turmoil is right here in Taiwan," said Brian Halla, president and CEO of National

$500 PCs, page 62

Sun's shine: Unix

CONTINUED FROM PAGE 61

base and information management services to corporations and uses Unix servers from Sun, HP, IBM and Silicon Graphics, Inc.

When Dow Corning, Inc. decided to implement an SAP AG R/3 global rollout two years ago, the company chose Sun servers mainly because the systems

Sun's lack of NT products could keep it out of lucrative deals.

benchmarked better against the competition, said Ken Karls, an associate information technology consultant at the Midland, Mich.-based company.

"But one of the contributing factors [behind the decision to go with Sun] was the question raised in our minds about the commitment of the other vendors to Unix," Karls said. "With Sun, all the wood was behind one arrow."

Dow, which never used a Sun server before the SAP project, now has a 14-processor Sun database server and eight six-processor Sun application servers to host its SAP environment.

Despite such successes, Sun will have its work cut out for it to maintain its momentum, observers cautioned. The company's lack of NT products could keep it out of lucrative deals. At companies such as Dow, which are investing in NT servers, Sun will find itself precluded, Karls said.

Also, other Unix vendors aren't sitting idly by. After going full tilt at NT for the past couple of years, HP has come back strongly with its V-Class PA-RISC servers. The increased competition means that Sun will no longer be able to charge the premium prices it has been at the high end, Cieslak said. □

$500 PCs en route

CONTINUED FROM PAGE 61

Semiconductor, referring to what he called the critical role the island's manufacturers have played in bringing down the cost of PC hardware.

Eventually, that relentless drive toward lower PC prices will lead to PC-compatible "information appliances" replacing traditional PCs, Halla predicted. "The new PC is the PC that will enable the Information Age," he said.

But such low-cost information appliances still will have to be compatible with the Windows operating systems because of the popularity of the platform's applications among users, Halla said.

PC MUD SLIDE

Traditional PC prices also will reach new lows later this year.

By Christmas, for example, several of IDT's PC maker customers will bring out full-fledged PCs with most of the latest PC technologies, such as MMX, accelerated graphics port three-dimensional graphics and a 100-MHz system bus at a retail price of $500 — often including a 15-in. monitor, said Joe Baranowski, vice president of sales and marketing at Centaur Technology.

"These [$500 PCs] won't be from first-tier vendors, but there will be quite a few of them in the second and third tiers," Baranowski said.

And by some time next year, $399 prices may become a reality. That will mean that the processor cost must reach new lows of about $40, Baranowski predicted.

To facilitate such prices, IDT already is working on a new generation of highly integrated processors that will include more functions on the same piece of silicon as the processor core, Baranowski added. □

Uimonen writes for the IDG News Service in Taiwan.

S H O R T

Disk-drive shipments on the rise

Worldwide disk-drive shipments are expected to rise 16.9% next year to reach 152.6 million drives, according to a report released by Disk/Trend, Inc. in Mountain View, Calif.

The report also said the average price per megabyte for all disk drives is expected to fall below 5 cents this year, compared with less than 10 cents last year. The price per megabyte 10 years ago was more than $11. Tough competition and rapid advances in magnetic recording technology are the main reasons for the declines in price, the report said.

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*Based upon TPC-C benchmark results on March 30, 1998 (HP NetServer LXr Pro8, 4/333 cpus[2] at $58,650[3]; Sun Ultra Enterprise 450 Workgroup Server, 4/300 cpus[2] at $33,670[3]). TPC-C benchmark results are the only industry-standard benchmarks for measuring performance of transaction processing and database systems. TPC-C and TPC-D are registered trademarks of the Transaction Processing Performance Council. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. Microsoft and Windows NT are registered trademarks of Microsoft Corporation. Sun Ultra Enterprise 450 Workgroup Server and Solaris are registered trademarks of Sun Microsystems, Inc. ©1998 Hewlett-Packard Company. 7/98

Bank suffers downtime

By Peter Young
MELBOURNE, AUSTRALIA

FAILURE OF A high-end enterprise data storage system at the Bank of New Zealand (BNZ) has irritated bank officials.

Core applications were halted when an EMC Symmetrix 5500 storage system from EMC Corp. stopped working about two weeks ago at the bank's New Zealand headquarters.

Although high-end storage systems rarely fail, the incident marks the second report of 5500 trouble in recent times.

However, an EMC spokesman in Hopkinton, Mass., last week said the system didn't crash but automatically shut itself down when routine diagnostic tests revealed problems with a memory board.

BNZ's systems were off-line for about 90 minutes, said Hayden Park, group media and public relations manager at the National Australia Bank (NAB), which owns BNZ. It took four hours to completely restore BNZ's information technology systems to normal.

Causes of the downtime have been resolved, but the bank wasn't prepared to go into specifics, Park said. Joe Mifsud, NAB's technical services manager, declined to comment.

In the end, BNZ technicians had to rebuild critical logs for data held by the Symmetrix 5500, which supports an IBM DB2 database in an IBM MVS mainframe environment. Park said no live data was lost because of the incident.

The EMC spokesman said that when diagnostic tests revealed that the faulty memory board had the potential to cause serious problems, the system automatically took itself off-line. "The systems are designed to make data integrity the highest priority in any kind of a failure," he said. "As far as we know, no data was lost as a result."

Although high-end data storage systems rarely fail, the incident marks the second report of 5500 trouble in the region in recent times. A similar system operated by outsourcer Electronic Data Systems Corp. reportedly crashed several months ago, which caused disruptions to some customers and Air New Zealand applications. □

Jaikumar Vijayan contributed to this report. Young writes for Computerworld Today *in Australia.*

NEW PRODUCTS

PROCOM TECHNOLOGY, INC. has announced the NetForce 1000, a direct network-attached hard-disk storage array.

According to the Irvine, Calif., company, the array has its own 64-bit operating system, attaches directly to an Ethernet or Fiber Distributed Data Interface network and acts as a server-independent data pump when clients request stored files. It supports RAID levels 0 to 5, can house 90G to 900G bytes and works with both Unix (Network File System) and Windows NT (Common Internet File System) files.

The product costs between $73,275 and $278,405.

Procom Technology
(714) 852-1000
www.procom.com

AIWA AMERICA, INC. has announced Bolt, a desktop, Travan-based tape-storage drive.

The Irvine, Calif., company, said the drive uses an Enhanced Integrated Drive Electronics bus interface rather than a floppy interface and doesn't require another card slot. The drive supports data transfer rates of 5.33M bit/sec. It is compatible with Travan TR-3 cartridges with capacities that range from 6.6G to 10G bytes each.

The drive costs $149.

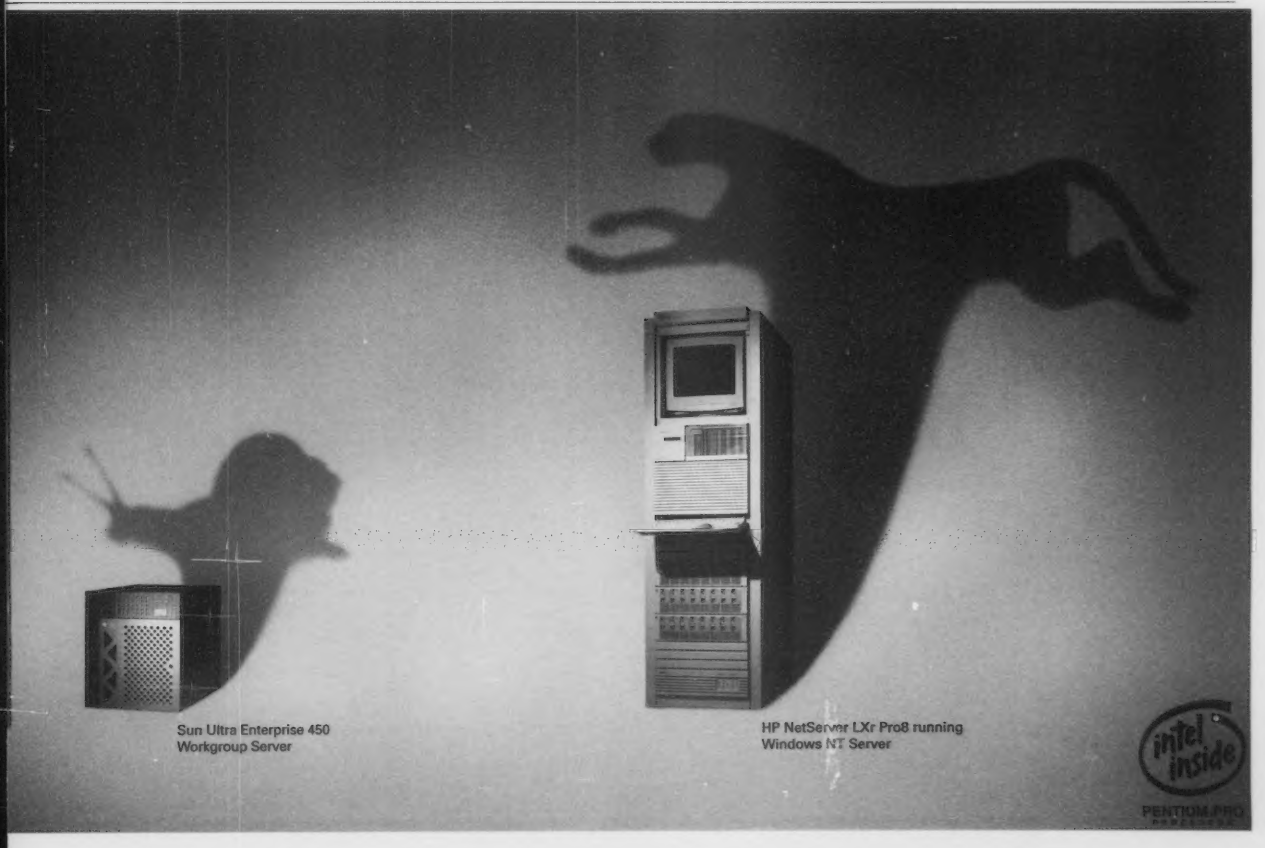
AIWA America
(714) 862-0200
www.aiwa.com/csd

QUANTUM CORP. has announced the PowerStor L500 and L200 digital linear tape (DLT) storage libraries.

According to the Milpitas, Calif., company, the libraries were designed to back up and archive data stored on Unix and Windows NT servers. The L500 can incorporate up to three DLT drives and can house 980G bytes of compressed data using DLT 7000 tapes or 560G bytes using DLT 4000 tapes.

The L500 costs between $10,000 and $29,000, and the L200 costs between $6,000 and $11,000.

Quantum
(949) 477-7924
www.quantum.com

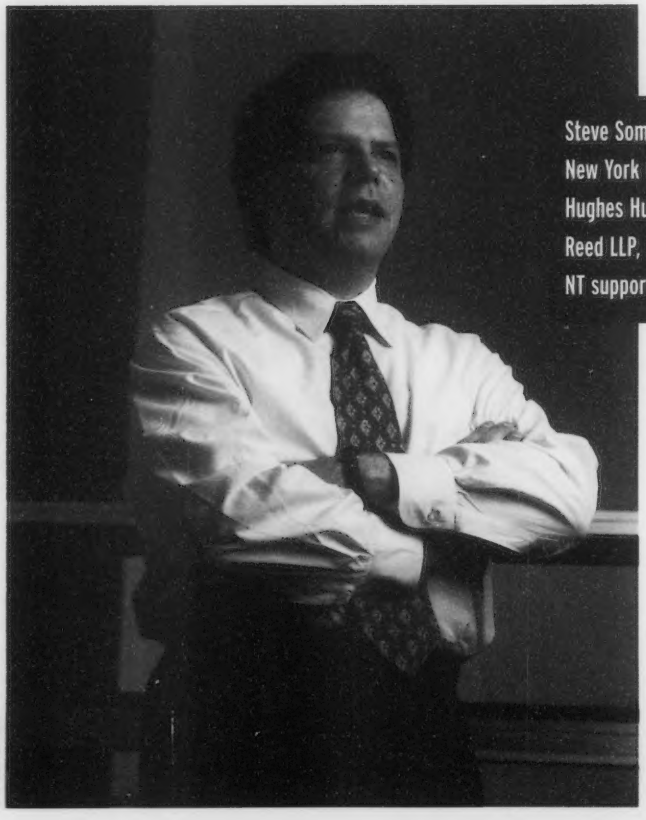


Managing

NT ATTITUDES

AN IS PRO FINDS HIS PEERS AREN'T LETTING CONTROVERSY, OR EXECUTIVE PRESSURE, GET IN THE WAY OF DECISIONS ABOUT WINDOWS NT

By Brian D. Jaffe



NICK CARDILLICCHIO

Steve Sommer, of the New York law firm Hughes Hubbard & Reed LLP, is a staunch NT supporter.

Just because technologists don't like corporate politics doesn't mean they aren't politically savvy. But it's the politics of technology — Microsoft vs. Netscape, Wintel vs. Apple, RISC vs. CISC — and not Republicans vs. Democrats, that arouses their passion.

And given the strong feelings about Bill Gates, I wondered, as a corporate information technology director, whether technologists believe Microsoft Corp.'s sales push for the Windows NT network operating system would cause them to give NT the short shrift.

Although there is no shortage of people who dislike Microsoft and who think NT still needs to develop, IT professionals have responded — well, professionally — to the introduction of NT into their environments. Virtually every IT professional I spoke with says he or she has kept an open mind. But they start pawing the ground when Microsoft goes over their heads and pushes NT to CEOs and top executives.

I'm not talking about desktops, where it is pretty much a given that NT will win by a landslide. The best seats for this campaign will be in the data center, with a clear line of sight to the servers.

One candidate is Unix, the grassroots nominee that used free distribution and college campuses to gain popularity. Next on the ballot is Novell, Inc.'s NetWare, but some pundits think it is graying around the temples, which might temper its attractiveness to Generation Xers. Last, there is Windows NT, which thinks (a la Ross Perot) it has enough resources to win anywhere.

Most of the IT shops I spoke with have at least a few servers running NT, and they have been deployed with minimal resistance. In fact, opposition to the use of NT Server has been so limited that the only real mud being slung is aimed at Microsoft, not NT. Mark Boyajian, an information specialist at an energy and environmental company in the Northeast, says that "Microsoft is a marketing company that happens to sell software." Yet he echoes the sentiments of many IT professionals when he says that choosing, or avoiding, a product based on the vendor is an "uninformed choice" and probably happens too often.

Why the calm acceptance of NT? For one, shops need NT Server to run other Microsoft software, such as the Exchange Server messaging platform, or its Internet Information Server (IIS) product, which many companies use to run their intranets. In the companies I talked to, NT Server was brought in because the staffs felt it was the best, or only, product for specific needs.

Another reason: Staff members are eager to learn popular technologies. Steve Sommer, chief informa-

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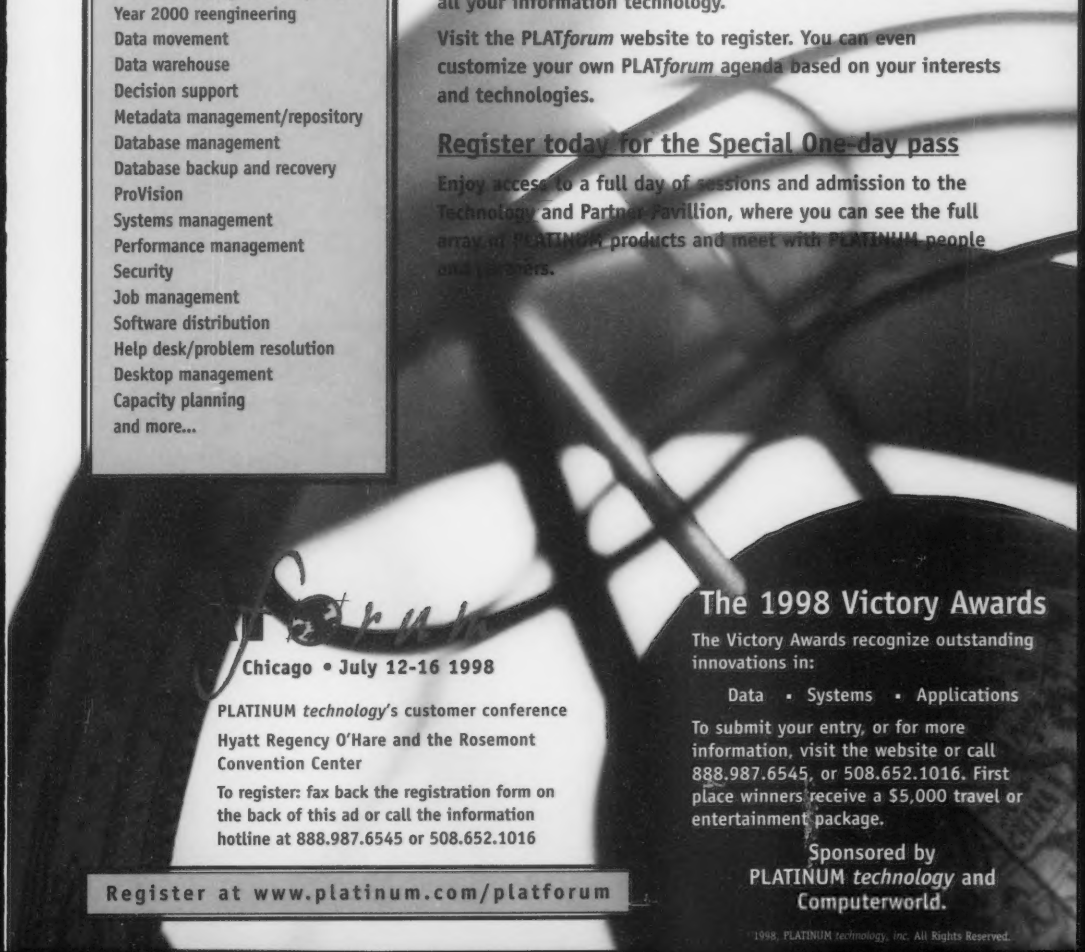

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tion officer at Hughes Hubbard & Reed LLP, a New York law firm, says his NetWare experts showed a little skepticism at first to the idea of NT servers, but at the same time "they wanted to learn [NT]" so it really didn't take much convincing when the firm decided to bring NT into the environment.

My interviews revealed that most IS staffs took nonpartisan stances when NT was first introduced into their environments. But, after putting it through its paces, some are wondering aloud. Michael Crowley, vice president and CIO at Rich Products Corp., a frozen foods manufacturer in Buffalo, N.Y., says, "More [NT] servers are needed to replace a comparable server in the NetWare world." Windows NT is "not ready for prime time," he says.

Jeff Price, Microsoft's product manager for NT Server, acknowledges "perception [of NT's capabilities] in the marketplace is lagging" behind the product's true potential. He says NT is highly scalable and delivers high-end performance. Price adds that Microsoft uses "industry-recognized benchmarks to test and prove performance."

Just as IT professionals know the importance of evaluating a product on its merits, they also value free-market competition and a better mousetrap. Even staunch NT supporters such as Sommer, who says "NT is the future," feel that competition ensures the best products.

POLITICS AT THE TOP

But don't let the calm acceptance fool you. IT professionals get up in arms when technical products are marketed directly to executives. Want to raise a technologist's ire? Just tell him Microsoft has invited his CEO to an executive briefing.

A technical manager can feel pressured when company executives return from a product briefing thinking they've just seen the greatest invention since pockets. If you convince the executive he's wrong and fail with your own choice, you've shot yourself in the foot. If you bow to executive pressure and fail, you're in the position of explaining to the boss why his preference didn't work, or looking like you didn't want it to succeed.

This isn't like an enterprise resource planning vendor targeting its wares to executives. Technologists understand that the people who know the business are the ones who need to evaluate software that will run the business. But a network operating system isn't an application, it's a technology platform. IT professionals feel that once the business experts have done their job, the suits should step aside and let the technologists worry about selecting the platform to run it.

Phil Easter, technology strategist at Greyhound Lines, Inc. in Dallas, says, "Executives hear hype on TV and [in] trade rags" and easily can be tempted by the "gee-it's-new" bandwagon. Easter feels strongly that it's "not worth ripping out something that is working, to replace it with something that just looks good on paper."

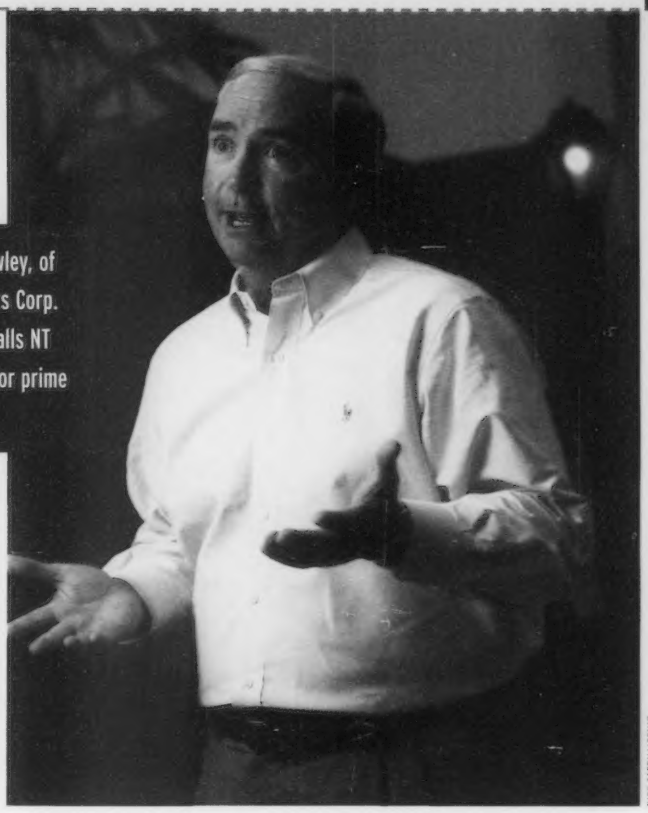
Some have complained that Microsoft's campaign to sell NT as the de facto corporate network operating system has been aimed at upper management, bypassing the technical professionals. Randy Bryan, senior vice president for distributed services at Hibernia National Bank in New Orleans, is one. He says Microsoft's sales efforts have been "very targeted to the high level," and adds that there was "no question it was intentional to avoid the technical people." He contrasts that with his bank's relationships with Novell and Cabletron Systems, Inc., which he calls "very successful because [those vendors] work very closely" with those on his staff who have the technical skills and responsibilities.

It seems more than a handful of corporate executives have come back from NT presentations to start questioning their staffs about technology choices. Crowley says he wrestled with the NT issues for about 18 months and decided to do a side-by-side comparison late last year. Now he's fully prepared to defend his choice to continue with NetWare.

Easter says his executives heard the NT hype and started asking, "Why don't you switch over?" But, he says, "the executives didn't understand the issues of managing servers . . . they were only looking at the up-front costs."

Although Microsoft's Price agrees that some of the company's most visible marketing efforts are for "business decision-makers," he says three of every four people who attend executive briefings are technical professionals.

Because NT isn't the first new technology to be introduced, IS professionals know not to proceed blindfolded and have learned to smooth the implementation process. Obviously, training in the new skill set is key.



Michael Crowley, of Rich Products Corp. in Buffalo, calls NT "not ready for prime time."

NICK CARDILLICCHIO

With technologists, it appears, rational thinking, without resistance, interference or influence, is the best way to approach new technology possibilities. Like Bryan, who is proud that his network operating system decision was "grounded in reality," IT professionals know new technology comes and goes; and if something is going to succeed or fail, it is best done based on fact, not emotion. □

Jaffe is an IT director in New York who frequently writes about issues related to managing technology in the workplace. He can be reached at bdjaffe@compuserve.com.

The great compromise

When considering a new technology, a technical manager can feel blindfolded and tied down if he gets caught between an executive and a staff of technical experts. Here are a few guidelines that can make the process cooperative instead of competitive:

- **If executives are invited to a sales pitch, push for someone from the technical staff to sit in.**
- **Have IS staff do a side-by-side comparison of the competing products and document findings. (This is also a great way to get evaluation products and free technical support.)**
- **If the technical staff believes the vendor isn't being entirely accurate in its sales pitch, encourage staffers to investigate the claims and separate fact from fiction.**
- **Your staff's evaluation shouldn't be one-sided. If they think the product is a poor choice, ask if it has any advantages or useful applications in your environment.**
- **Let the vendor serve multiple masters by letting it know its product will have to please technical and business decision-makers.**
- **Have open discussion meetings with your technical staff so everyone can be heard.**
- **If you decide not to go with the proposed technology, share your findings and reasoning with the vendor and upper management, and be clear that you now consider the issue closed.**

— Brian Jaffe

DON'T FORGET the GUARD

Do you want airtight IS security? Working with the people who guard your buildings can go a long way in keeping out intruders

By Deborah Radcliff

Some organizations preach data security as if it were a religion, but sometimes the message never gets to those who guard the building.

So when ex-hacker Peter Shipley sneaked into data centers for kicks, he knew how to break in.

"It's so easy," says Shipley, now a technical security consultant in Berkeley, Calif. "All you have to do is tell the guard you're a temp; or shoulder surf [follow closely behind someone with a badge]; or ask for the restroom while a cohort slips past."

If that doesn't work, stroll in through open shipping bays or maintenance doors late at night. If need be, move aside ceiling panels and climb over locked doors to get into the super-users' offices.

Such vulnerabilities, he says, could be avoided if technical security folks worked with building security and maintenance to protect corporate information assets. But communication between those departments is a weak link in the information security chain.

TIP: TALKING IS VALUABLE

"First, you've got the information security guy. Then you may have the physical security guy. Both try to do their jobs. The only problem is, they never talk," explains Michael Guidry, a former Texas state trooper who now heads the Guidry Group, a Houston-based security consulting firm.

"You've got to get these folks in the same room sharing the design of the network and the design of the company. If they don't, it's the largest mistake any company can make. And the hardest to overcome," Guidry says.

For example, he says, corporate security and the facilities department must understand the importance of keeping wiring closets locked and guarded.

Bad guys can easily take down the network or halt access by ripping the wiring or Ethernet cables from unlocked electrical closets.

And it's frightening to think of the consequences if backups are housed in that same closet.

Former employees with unrevoked badges could also wreak havoc if security doesn't escort them out immediately.

One of Guidry's clients suffered hundreds of thousands of dollars in damage after a terminated employee held a butane lighter flame under a sprinkler alarm system that rained destruction on its data center.

Facilities and security must also communicate during construction projects.

Last year, when inspecting a site for a client, Price Waterhouse LLP's Enterprise Security Systems division found a bank of active Ethernet connections in an empty suite undergoing renovation.

Neither the room nor the reception area into which it opened were being guarded. Had the information systems department told other departments of the significance of hot Ethernet jacks, that wouldn't have happened.

IS leaders admit they often overlook the importance of communicating with building security and facilities.

Says John Keast, chief information officer at $30 million San Francisco-based utility PG&E Corp., "Policy governing ongoing dialogue between these departments is immature. I guess we need to think more suspiciously."

At PG&E, security and facilities personnel are actively involved in new building and renovation. Guards secure the perimeter to control access during work, and sign-off is required from both departments before people are moved in.

But, he says, follow-up and ongoing discussions about routine, daily security issues such as those Guidry and Price Waterhouse mentioned simply don't happen.

TIP: TEAR DOWN "THE WALL"

Unfounded animosity between departments is the biggest reason for the lack of communication between them. Building security, often made up of retired FBI agents or police officers, is distrustful of those "hackers" in IS. And technicians tend to think of building security folks as technically challenged beef-heads.

But that "wall" isn't there for Jenean Paschilidas, staff director of electronic security at the Federal Reserve Bank of New York. Working under the auspices of the IS department, she meets monthly with leaders from facilities, security and other departments to discuss information security issues.

With an underground vault full of internationally owned gold and $3 trillion in digitized dollars passing through its system daily, physical and technical security are of the utmost importance.

The Federal Reserve's physical security department is staffed by highly qualified, gun-toting officers who never leave their posts empty, keep detailed visitors' logs and even pass visitors' belongings through X-ray machines.

But they wouldn't know a smart card from a credit card without Paschilidas' diplomatic awareness training. "I start dialogue by bringing up one of security's daily functions, like protecting the vault. If something happened to that gold, it could create an international incident," she explains. "Then I tell them the same thing could happen if the information flow between our central banking services and international accounts wasn't perfect and flawless."

Paschilidas advocates approaching discussions with the attitude that security and facilities' functions are of vital importance to the company. "Never, never act like your job is more important than theirs."

TIP: TECHNOLOGY HELPS

Some companies bridge the communications gap with technology.

PG&E, for example, is automating its security functions. Keast's staff is implementing a network management-based system that will monitor remote cameras, door locks, building access and other functions.

The management consoles will reside in both the IT and security departments.

Still, Keast says, that won't relieve his department of the responsibility of keeping building security folks informed and aware of information security issues.

Even with the best policies and/or technology in place, there's no such thing as information security nirvana. Paschilidas says, "If you want security to be prevalent throughout the organization, you must continue to communicate that." □

Radcliff is a freelance writer in Sebastopol, Calif.

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DON'T SHOOT THE YEAR 2000 LAWYERS

ED YOURDON

If you're treating your lawyers as a bureaucratic nuisance, think twice. Some will be as valuable as a building full of Cobol programmers when your company is hit with a year 2000 lawsuit.

Note that I didn't say *if* your company is sued. A Fortune 1,000 company with deep pockets is likely to be sued even if its systems are working properly. It's the infamous "supply chain" problem: If a supplier, partner or customer has a year 2000 problem, then the lawsuits could ripple back to your company. If the problem is so bad that your supplier, partner or customer declares bankruptcy, then, as year 2000 legal expert Jeff Jinnett at the New York law firm LeBoeuf, Lamb, Greene & MacRae puts it, the victims are likely to sue everyone standing around the dead body.

Thus, unless some extraordinary federal legislation freezes such year 2000 litigation, assume you'll be facing a lawsuit. And that's where the defense lawyers on your team can help; they can minimize the risk of punitive damages being assessed on top of any direct damages caused by year 2000 problems. They will do this by reminding us of the very same things that good project managers and software engineers have been recommending for decades.

THE LAWYER AS AUDITOR

Here's the kind of advice your lawyers will give you: "Document what you're doing. Develop a formal, disciplined methodology for your year 2000 project, and keep an audit trail to demonstrate that your people are following it meticulously. Testing is important, and make sure you carry out baseline testing and regression testing. Configuration management is critical, too." Your lawyers will recommend a "best practices" approach: Even if your year 2000 efforts aren't perfect, you will need to demonstrate that you've done just as good a job as the best IT organizations in your industry.

Sounds obvious, doesn't it? If so, why do we need lawyers to tell us? The answer is simple: We have *not* been doing it all along. Lawyers are like auditors in this regard: If you try to bluff, they'll catch you. If you tell your lawyer, "Of course we do configuration management," your lawyer will say, "Show me." You'll get the same comment about all the other obvious aspects of project management: Show me the test plan, the audit trail, the methodology; show me the evidence that your teams have actually carried it out. But unlike the methodology police who have been asking those questions for years, the lawyers are asking for a very pragmatic reason: They might actually have to provide tangible evidence of a best practices year 2000 approach in a lawsuit.

The largest companies in the land are realizing that their potential legal exposure to year 2000 is hundreds of millions, if not billions, of dollars. If that's the case, you should consider going a step beyond showing the best practice material to your lawyers. Ask them to stage a mock trial to see if you can successfully defend a year 2000 lawsuit; make sure that the CEO, CIO and key year 2000 managers are involved. Chances are it will be one of the most terrifying and humbling experiences you've ever had in your professional career.

This may seem like an exaggeration. But remember that in most software lawsuits, the jurors are uninformed computer illiterates who have a difficult time maintaining any interest in the abstract issues associated with software. The average citizen has heard that solving the year 2000 problem is a simple matter of converting two digits to four digits; so the jury is unlikely to be very sympathetic to defendants whose excuse is that it was a large, complex project.

SOMEONE'S GONNA PAY

More important, chances are that everyone on the jury will have suffered some problems because of year 2000. The net result: Year 2000 jurors are likely to be angry people, and their attitude will be, "Someone's gonna pay for this." In such circumstances, it's all the more important for the defendant company to have a squeaky-clean year 2000 track record.

It's a shame that a complex problem is further complicated by the prospect of expensive lawsuits. And it's also unfortunate that some defense lawyers are advising their clients to stay silent about their year 2000 status and activities. I think the year 2000 lawyers are reminding us, as Spike Lee put it, to "do the right thing." It's something we need to hear. It's important to get the lawyers involved early, to confirm that you *are* doing the right thing in your year 2000 projects. □

Yourdon heads the Year 2000 Advisory Service at Cutter Consortium in Arlington, Mass. His most recent book is Time Bomb 2000. *He can be reached via E-mail at ed@yourdon.com.*

f.y.i.

'Master-ing' E-commerce

If you're yearning to learn about doing business over the World Wide Web, a California university has a program for you.

A first-of-its-kind master's in electronic commerce degree program is being offered at National University in La Jolla, Calif.

The program, which debuts next month, comprises 12 courses including Web servers, database management for electronic commerce, configuration and implementation of LANs and WANs, Web-based applications, special information architectures, graphic design for electronic-commerce applications, global network marketing and advertising, electronic payment systems and information as a corporate resource. The capstone of the program is a real-world electronic-commerce research project in which teams of students design, develop and implement electronic-commerce systems for businesses.

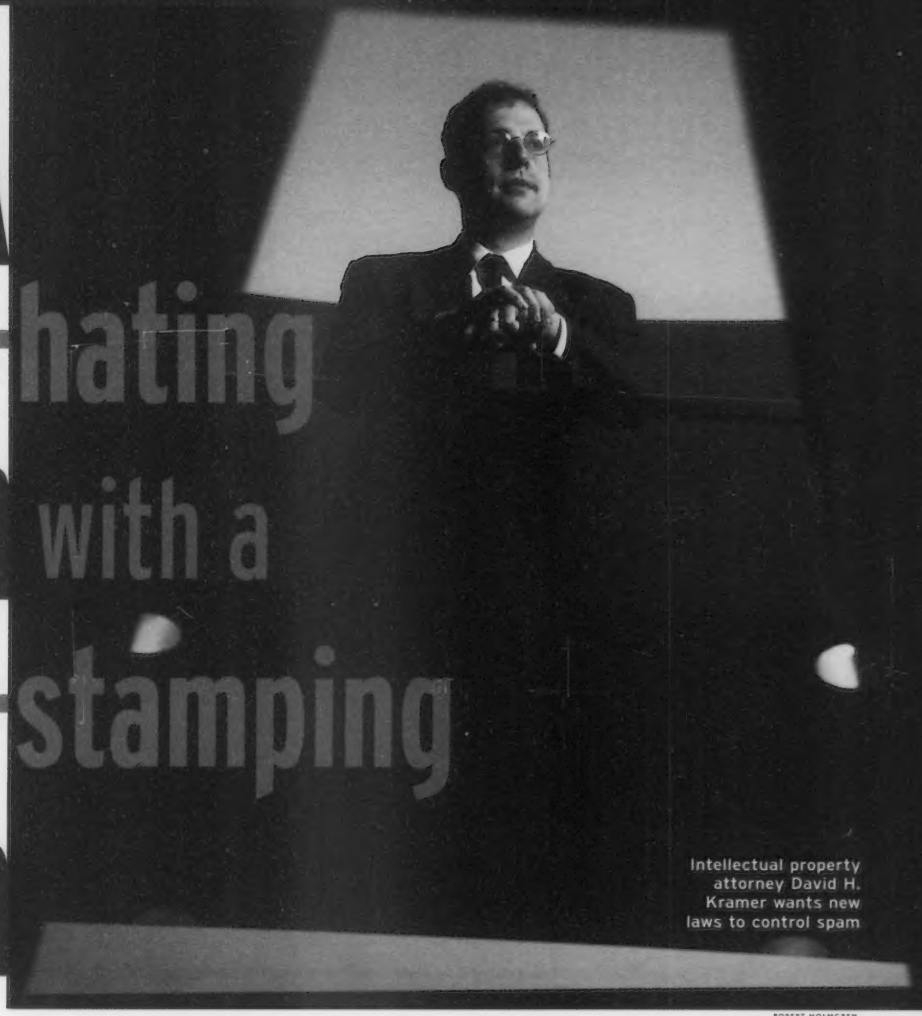
"In five to 10 years, electronic commerce is expected to be a $250 billion to $300 billion business," says Leo Preiser, director of the Center for Technology at the university, which has 11 California campuses. "Many companies are already jumping on the bandwagon and some will be redesigning their businesses completely."

National University's 11,000 students are mostly degreed professionals who are changing careers. "The master's program appeals to a wide audience of those who would like to have interesting jobs in the future associated with using the Internet for commerce," Preiser says. "We want to make sure the university is on the cutting edge with its offerings and is being responsive to the needs of the business community."

— Kathleen Melymuka

In Depth

A spam-hating man with a spam-stamping plan



Intellectual property attorney David H. Kramer wants new laws to control spam

ROBERT HOLMGREN

Believe it or not, David H. Kramer despises spam more than you do.

Kramer is an intellectual property attorney at the Palo Alto, Calif., firm Wilson Sonsini Goodrich & Rosati. After successfully taking on spammers on behalf of Internet service providers (ISP), his momentum led him to write a proposed antispam law for California that has gained support from service providers, politicians and even some hard-core Internet libertarians — no mean feat.

Steve Alexander asked Kramer about the proposed law, the damage spammers do and what keeps him focused on the issue.

CW: You seem to have a genuine hatred for spam. Why is that?

KRAMER: You can't be around this issue very long without recognizing just how outrageous the practice is. It is the only form of advertising in which the advertiser pays virtually nothing and instead shifts the costs of advertising onto the backs of ISPs and the recipients of advertisers' messages.

But the most pernicious aspect of spam is the nonmonetary cost. It's the threat to the utility of E-mail service. There are the parents who won't let children sign on to E-mail because they fear getting pornographic messages. There are people who won't give out their E-mail addresses in electronic commerce because they're afraid of being added to spammer E-mail lists. And there are legitimate advertisers who want to reach consumers willing to receive E-mail, [but] who won't use E-mail for fear of being branded a spammer.

CW: What do spammers send that's objectionable?

KRAMER: Selling pornography, offering cable descramblers that let people steal cable TV services, promoting multilevel marketing schemes.

CW: You call spamming "an

Spam-hating, page 70

A spam-hating man with a spam-stamping plan

CONTINUED FROM PAGE 69

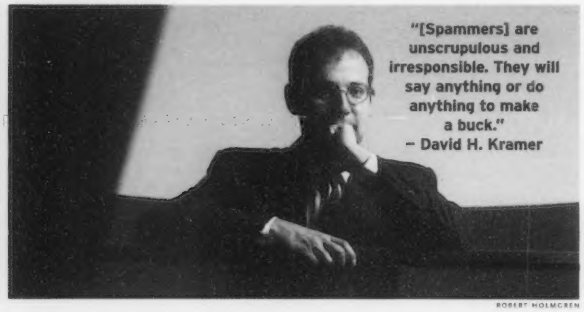
outrageous and unconscionable practice." Why is spam any worse than ordinary junk mail, which is legal and tolerated?

KRAMER: There are dramatic differences. First, in direct mail, the sender bears a certain cost per piece of mail. So there's a natural limit on the number of mailings that are sent out, and there's an incentive for mailers to target their mailings.

Secondly, in direct mail, the sender is bearing the [delivery] cost, not the deliverer. In junk E-mail, the sender bears no incremental cost for more messages, so there's no natural limit on the number that are sent. And the ISP, or deliverer, receives no compensation for carrying them.

CW: Didn't one spammer claim to have distributed 25 million E-mails in a day?

KRAMER: They can send to millions of people a day, and the next day and the next. Because a spammer doesn't bear any extra cost for sending more messages, 100 messages cost the same as 1 million.



"[Spammers] are unscrupulous and irresponsible. They will say anything or do anything to make a buck." – David H. Kramer

ROBERT HOLMGREN

CW: How much bandwidth clutter does spam create?

KRAMER: AOL has said in court filings that up to 30% of the mail it handles is spam. It's tough to say what that number is industrywide; 5% to 30% probably is accurate.

CW: Will the spam problem get better or worse?

KRAMER: Worse. Not only will there be more spammers, but they will be sending things like audio and video clips and graphics, which eat up far more bandwidth. If someone sends you an 800K E-mail message with pictures of naked ladies, and you have a 14.4 modem, you will be downloading for several minutes, and it will completely tie up your computer.

CW: Can't filtering software weed out spam?

KRAMER: It can make a dent. But filtering comes with its own problems. To filter, you have to know where the messages are coming from; a filter blocks everything from an offending address. But spammers are wise to that trick and change their E-mail addresses every day, rendering most filters useless. Secondly, filters can give false positives and negatives. Mail you want may get filtered out, and other mail you don't want may slip past the filter.

CW: Besides changing addresses, what other tricks do spammers use?

KRAMER: Most often, they will forge the point of origin on their messages. They do that so that they can deflect to some unsuspecting third party the angry replies and the automatic return of undeliverable messages. It's very easy to do; I could send you an E-mail message right now that would say it's from Bill@Whitehouse.gov.

CW: How expensive is it for someone to become a spammer, and how difficult is it to prosecute that person?

KRAMER: Anyone who has $100 worth of software and a $19.95 ISP account can be a spammer. An ISP has to spend thousands of dollars to go after a spammer in court. That's just not an economically justifiable proposition for the ISP, so most ISPs don't sue. And even if an ISP sues, most spammers are fly-by-night companies from which it is difficult to recover damages.

CW: How many spam cases have you handled?

KRAMER: Half a dozen. Two of the more important ones were filed on behalf of Concentric Network Corp., a large ISP in Cupertino, Calif., and CompuServe, Inc., which is located in Ohio and is now part of AOL.

Concentric came to us in November 1996 because notorious spammer Sanford Wallace and his company, Cyber Promotions, Inc. of Philadelphia, were using their service to send junk E-mail and to bombard Concentric subscribers with junk E-mail. We sued Wallace and Cyber Promotions for trademark infringement, unfair competition and violations of the Computer Fraud and Abuse Act and the Electronic Communications Privacy Act — all federal laws — and under some California fraud and breach-of-contract laws. The case was quickly settled.

About that time, CompuServe asked us to undertake a similar case against Wallace and his company. We pursued that case on the same legal theories with one important addition: We argued that a junk E-mailer commits trespass on the equipment and service of an ISP. The federal court agreed and issued a landmark opinion to that effect in February 1997. For the first time, you had a federal court saying that what these irresponsible mass marketers are doing is against the law.

CW: What have your court cases taught you about spammers?

KRAMER: They are people who know what they are doing is wrong and don't care. They are unscrupulous and irresponsible. They will say anything or do anything to make a buck.

CW: Do ISPs always win in court?

KRAMER: I've not heard of a single case in which an ISP has lost. But court rulings only apply to the parties before the court in that case, so the junk E-mailers just move on to the next ISP and hope their next victim won't take them to court.

CW: What happened after the CompuServe case?

KRAMER: I wrote a proposed California law, AB-1629, that would take the law as laid out in the CompuServe case and make it a California statute.

The proposed law makes it clear that spamming is against the law and gives ISPs the right to damages set by the statute. Establishing damages is the key, because the hardest problem we faced in our lawsuits was demonstrating to the court the value of what our clients lost when a junk E-mailer engaged in spamming. There is simply no way to quantify those damages. What AB-1629 does, in the interest of deterrence, is quantify the ISP's loss at $50 per E-mail message sent, with a daily cap of $15,000.

The proposed law also would make it a crime to forge somebody else's domain name in an E-mail and thereby cause damage to a computer system or disrupt or deny the offering of computer service. It also would prevent a spammer from signing up with an ISP for the sole purpose of sending out junk E-mail if the ISP contractually prohibits it. That would stop the practice of spammers hopping from one ISP to another.

The bill is still moving through the California state legislature after being approved by three committees.

CW: Why hasn't legislation been an effective deterrent to spam?

KRAMER: The Internet community has a general reluctance to accept regulation of the Internet. My bill was designed to overcome that hesitance. So far, we've gotten a lot of support for AB-1629 because the government is removed from the regulatory process.

CW: What's in it for you to write such a law — a chance to be at the cutting edge of Internet law?

KRAMER: Sure, it helps in terms of recognition in the Internet community as an attorney who cares about the future of the Internet and is able to assist an ISP. But that's not why I did it. I did it because it's the right thing to do. Somebody has got to spend time working with legislators and educating them on the problem and what the solution should be.

CW: What about national legislation?

KRAMER: I'd love to see AB-1629 introduced on the federal level, but until it is, Rep. Chris Smith's [R-N.J.] Netizens Protection Act of 1997 is the best alternative.

The Smith bill is based on the junk fax law but modified to cover junk E-mail. Congress passed a law in 1991 that made it unlawful to send unsolicited junk faxes. That law had a dramatic impact. I think that with a national junk E-mail law, you might see 95% of spam disappear overnight.

[The bill] is opposed by some civil libertarians, some direct marketers and some ISPs who don't like idea of government mandating a solution to a problem. The bill remains in a House subcommittee.

CW: Your California bill could avert a lot of lawsuits. How do your fellow attorneys feel about that?

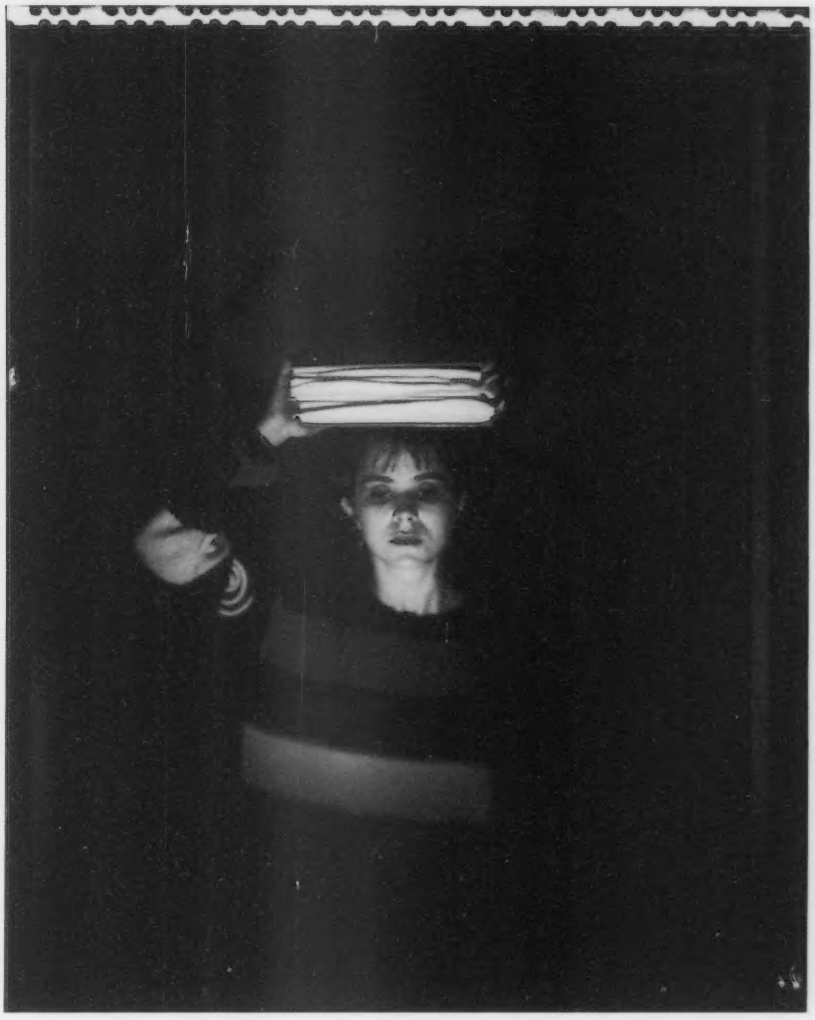
KRAMER: Absolutely it could cut down on the number of lawsuits. But this is the right thing to do, and the firm and its clients think it's the right thing to do.

CW: Where do you see your practice, and that of your firm, going if your proposed legislation is passed and restricts spamming?

KRAMER: There's plenty of other work for Internet lawyers out there. I could be happy if spam ended tomorrow and I never had another spam suit. □

Alexander is a freelance writer in Edina, Minn.

Diary of an IT grad



MARK LUINENBURG

The following job-hunting diary was adapted from extensive interviews with Julia Peker, who is graduating from the Carlson School of Management, University of Minnesota in Minneapolis, with a bachelor's degree in MIS.

By Leslie Goff

October, 1997

➡Attended campus career fair; talked to Electronic Data Systems Corp., The Carlson Cos., Honeywell, Inc., General Mills, Inc., Minnesota Mutual Insurance Co. and American Express Financial Services. The lady from Amex remembered my resume from when they tried to hire me for an internship. She told me they would be on campus in a month and would be really interested in interviewing me.

November, 1997

➡Registered with the Career Services Center at Carlson School of Management; left a bunch of resumes there. Will start dropping in every Monday morning to eyeball the bulletin board.

➡I'd really like to work in Europe for an American or Western European company. I went on the 'net looking for possible contacts, and I faxed my resume to Intel Corp. and Price Waterhouse LLP offices abroad. They both responded that positions in Europe require too much experience and training for recent college grads. If I'm not going to Europe, I don't want to leave Minneapolis. I like living here a lot — my family's here.

➡It's a good thing I went to that career fair because I made the first cut with American Express. They're interested because of my banking background and because they have an idea of who I am.

➡Had interview with Amex information systems manager. We talked about the company and the projects they're working on. The questions weren't very technical — they were more about me and my personality: Did I have any leadership experience? Have I ever been in a conflict, and how did I resolve it? What did I think my strengths and weaknesses are? She said she'd call me back within two to three weeks.

➡It's nearly Thanksgiving already. I have a second interview with Amex tomorrow. Today, they took about 10 of us on a bus tour of Minneapolis — some of the kids are from out of town. Afterward, we went to the Rock Bottom Brewery, a place here in town that a lot of young, professional types go to. It all felt pretty friendly and relaxed. I'm nervous but excited because it's my first try at getting a job.

➡What a day! I had three interviews at Amex starting at 8 a.m. By the end — they all asked the same questions — I just couldn't think of any new answers. The third manager I spoke with said that's OK — they know it's hard to keep it fresh. The first interview was with a human resources person, then a

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Diary of an IT grad

CONTINUED FROM PAGE 71

project manager and then a senior programmer. They all said if I get an offer and accept it, I can choose the project I want to work on once it gets closer to my start date.

•• Amex called and said an offer is in the mail. What a relief! The salary is $37,000 with a $2,000 signing bonus in my first paycheck. I'd be a systems analyst. I have two weeks to decide.

December, 1997

•• I told my internship manager at United Health Care about the Amex offer. I didn't want to be interviewing behind his back, so I let him know I'm shopping around and was wondering if I should consider them a possibility.

•• Sent resume and cover letter to Norwest Bank, where I worked for three and a half years, so I know a lot about their business operations.

•• My internship manager offered me an associate software engineer position. He topped Amex — $38,000 with a $2,000 signing bonus! We talked about the project possibilities — it sounds good.

•• Some guy called me tonight from a consultancy called McKinsey & Co. I've never heard of them, but he says it's a company that makes careers. They do strategic management consulting. They aren't in IS; they usually consult with top executives such as CEOs. What he told me sounded too good to be true. The salary for college grads is $48,000! I could stay in Minneapolis, but I'd have to travel Mondays to Thursdays. Everything — the hotels, the meals — is first-class, but the travel aspects scare me a little bit. Then, when I think of the opportunities, I'm overwhelmed.

•• I called Amex today about getting an extension on considering their offer.

•• Interviewed with 3M on campus. They have a huge office in Brussels, and I was hoping I could work there. But the interviewer told me it would be impossible for at least a couple of years. Most people there are managers, not college grads.

•• Interviewed with Minnesota Mutual on campus. That was very different from my other interviews. The woman was extremely structured, and she seemed really interested in what I had done in high school. She said they work mainly on mainframes, so there's no choice about the platform I'd work on, whereas most companies have said I wouldn't have to do mainframe stuff.

•• The woman from Minnesota Mutual called looking for my grades. She said they wanted to set up a second round of interviews. But I told her I'd accepted a different offer, which wasn't true.

•• A small consulting company called me today — Braun Technology Group. They're based in Chicago and have a new office in Minneapolis. I scheduled an interview in January — I don't really know why. I'm not even sure I want to do consulting.

•• Someone from Norwest left me a voice mail saying they aren't hiring college grads yet (even though I use to work for them).

•• Christmas break is here at last! Boy, do I need it.

January, 1998

•• Back from the break. 3M never called back. I'm not sure why — maybe I asked too many questions about Europe.

•• Wow, the Braun interview was great! I met with two people — one was a senior consultant in Braun's Oracle group who asked about my technical skills and my internship. He got really excited because I have Unix and data modeling experience and a knowledge of relational databases. He said I knew a lot more than most new hires. The other one was more like a personal conversation than an interview.

I like that the office here is small — only seven or eight people — and I like their projects. My job would be more on the technical side — but not coding. I'd most likely be on a data warehouse project doing database maintenance and installs.

But basically, the sky's the limit. And the only travel would be to Chicago for training.

•• Had my second Braun interview today — with the office director — and he told me a lot more about how they hire and promote people. You get to choose which group you work in, and if you don't like it, you can switch. First you go through a four-week training program. They give you your laptop and teach you how to be a consultant the Braun way. Then you do a week of Oracle database administrator training at a client site. Then you're assigned to a project with a senior consultant for a week. Then there's a week of presentations by managers of the different groups, and you choose which one you want to be in. Then they assign you a mentor.

•• Got the Braun offer today, and it's the best so far: $40,000 with a $3,000 signing bonus. I'm excited, but I still don't know what to do. The McKinsey pre-interview session is tomorrow, and the interview is Friday.

•• I don't think McKinsey is the place for me. I had trouble communicating with them at their presentation. They talked like if you didn't take a job there, you were a lost cause. The consultants were proud that they hadn't read a newspaper in three months because they didn't have time. For me, that was a little too much.

The salary is a lot of money, but if you average it out over 60 hours per week (what I'm told they work), it comes out lower than all my other offers.

•• Interviewed on-campus with Cargill, Inc., one of the largest grain importers and exporters. They are a really good company to work for, and they're international. The person who interviewed me said someone would call me in two to three weeks.

•• McKinsey called: I didn't make the second round.

February, 1998

•• Companies are still calling me for interviews! EDS, Kimberly-Clark, Inc. and some others. But I've decided not to accept any more invitations. I am tired and very stressed, and I just want to make a decision, and I don't know what to do.

•• Cargill called to schedule a second interview — in two weeks. I asked if they could do it sooner, but they said no.

•• Braun flew me to Chicago to meet people at their corporate offices, and it was great. Stu Braun, the president, really impressed me. He knew all the employees by name.

I went to several consultants' meetings, and he was at one of them, and it seemed like he let everyone participate in a decision being made about whether to partner with this data warehouse software company that had presented its product.

Afterward, they ordered beer and pizza, and everyone was really relaxed and friendly. Everyone in the company seems young, and I got to talk to some of the newer hires, and they really like working there.

I called them when I got home and accepted the offer.

•• Called Amex to say I'd accepted another offer, and the woman who offered me the job isn't there any longer. I left a message on someone's voice mail.

I also called Cargill to cancel the second interview. I had to leave a voice mail, but I tried to leave the door open.

March, 1998

•• All's quiet on the job-hunting front. I am so relieved to have made my decision. But my manager at my internship still wants me to reconsider, and I haven't given him a definitive answer.

Julia Peker

EDUCATION:

- Curtis L. Carlson School of Management, Minneapolis
  MIS Major – Graduation in July 1998
  Current GPA 3.77/4.00
- Minneapolis Community College, Minneapolis

EMPLOYMENT HISTORY:

- 06/97 to Present
  United Health Care Corp., Minnetonka, Minn.
  Systems Design Assistant Internship
- 08/96 to 06/97
  Norwest Bank Minnesota, NA, Minneapolis
  Customer Service Representative for Deposit Operations
- 05/96 to 08/96
  Norwest Bank Minnesota, NA, Minneapolis
  Balancer/Reconciler Internship
- 12/93 to 05/96
  Norwest Bank Minnesota, NA, Minneapolis
  Proof Operator
- 09/92 to 05/93
  International Organization Sputnik, Kiev, Ukraine
  Travel Coordinator for Students

April, 1998

•• Norwest finally called me today (April 22) for an interview. I said no because I've already accepted the Braun offer.

I expected them to call back sooner because I have a lot to offer them — I know both their business and their users.

May, 1998

•• Graduation is just around the corner — in July. I can't believe I start my job at Braun in August. They're giving me time off in October to go to Europe — that's my graduation gift to myself. Of course, United Health Care still wants me to accept a job with them, and I think they'd match Braun's offer. I guess it is still a possibility — I don't have a contract with Braun. □

Goff is a freelance writer in New York.

Computer

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St. Paul

REGIONAL SCOPE

Minneapolis and St. Paul

With corporate raiders increasingly on the prowl, IT managers are warning would-be bounty hunters . . .

DON'T TREAD ON ME

By Steve Alexander

THE CALLER was selling software. To whom in the IS department at Minnesota Mutual Life Insurance Co. in St. Paul should he talk about buying it?

He just wanted a name and a telephone number. But that's how information systems departments get raided. And raiding is on the rise in the Minneapolis and St. Paul market, where companies are feeling vulnerable.

"The amount of headhunting calls into our department has increased considerably. It's pretty annoying," says Jean Delaney Nelson, second vice president of application development at Minnesota Mutual. "I told the secretary to watch out for callers, and the people on our own staff alert us when a headhunting firm is calling from cube to cube. But there's not a lot I can do about it."

She isn't the only one concerned about raiding. "I think the answer [to raiding] is that you've got to take care of your people every single day. That goes well beyond compensation, and it's worth more than money to most people," says Scott Lien, director of IS services at Best Buy Co. in the suburb of Eden Prairie. Best Buy is an electronics retailer with 289 stores in 32 states.

SALARIES IN THE TWIN CITIES

JOB TITLE	1997 IT SALARY	1998 ESTIMATE
CIO/VP of IS	$74,000	$85,000
Director of IS	$67,000	$77,000
Senior programmer/analyst	$51,000	$57,000
Database manager	$51,000	$56,000
Senior systems programmer	$49,000	$54,000
Programmer/analyst	$48,000	$53,000
Network administrator	$41,000	$45,000
Lead computer operator	$34,000	$37,000

Source: *Computerworld*'s 1997 Annual Salary Survey and 1998 Hiring Forecast projections

WHAT RAIDS?

Twin Cities recruiting firms say they don't engage in raiding. But everyone knows it's happening.

"I've known situations where our contractors were at an assignment, and the same recruiter called each person in each cubicle down the line. But I can't say the names of the companies," says Harry Urschel, division director at staffing firm Robert Half International, Inc. in Minneapolis.

Raiding, though not a major problem in the Minneapolis/St. Paul area, appears to have become more significant in the past year. The degree to which raiding affects salaries and retention is difficult to gauge because IS executives and recruiters are reluctant to talk about it much.

"We've had some spot problems with raiding," says Tom Bozlinski, senior vice president of IS operations and network services at Fingerhut Cos., a national catalog marketing company in the suburb of Minnetonka. "It comes from recruiters and consultants and from people who leave here, then try to pick up some of the people they worked with. It is a problem for us but not a major problem."

But Bozlinski has taken precautions. "We deal with search firms a lot for hiring, and I make it clear that if we are to continue to do business, I expect that they will not do any raiding. We haven't quit doing business with any of them, but I've given them the warning."

"Last spring, I lost four people to one consulting firm. This general consulting firm found one of our people, and then we lost three more in two months. We will never hire that firm again; we have a long memory about that."
– Mike Minear, vice president and CIO, HealthSystem Minnesota

Raiding also has hit HealthSystem Minnesota, which operates a hospital and several clinics and is based in the suburb of St. Louis Park.

"Last spring, I lost four people to one consulting firm," says Mike Minear, HealthSystem Minnesota's vice president and chief information officer. "This general consulting firm found one of our people, and then we lost three more in two months. We will never hire that firm again; we have a long memory about that." □

Alexander is a freelance writer in Edina, Minn.

Supply vs. demand: Who wants what?

Mike Minear remembers a very different local job scene.

"This used to be a market where people had long-term jobs. What has changed here in the last 12 to 18 months is that the average programmer or project manager now is willing to change jobs for higher pay," says Minear at HealthSystem Minnesota.

It's a scenario ripe for raiding.

Jean Delaney Nelson at Minnesota Mutual Life Insurance sees a new lack of flexibility on the part of job candidates. "They only want to come to work here if they can do client/server or Web development. But they know the market is tight and that they can find a job doing what they want."

Tom Sweetman, area sales manager at Robert Half International, adds, "I think you are seeing a more savvy employee who recognizes there is more opportunity if he or she changes organizations — both from a financial perspective and as a way to stay current technically."

The highest demand in the Minneapolis/St. Paul area is for database, networking and PC LAN skills. Companies also are generating demand for Windows NT expertise by converting from mainframes or Unix systems to NT servers.

However, there is also demand for AS/400 and IBM mainframe programming skills, and year 2000 projects have made Cobol mainframe language skills scarce.

— Steve Alexander

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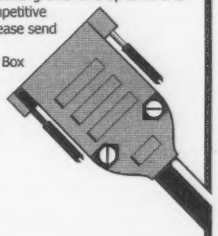

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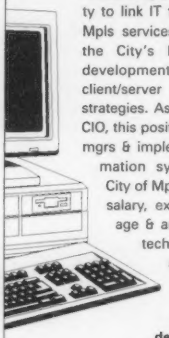

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RPG/400 Software Developers Assist in defining system scope and requirements, analyze utilization of existing systems requirements, & design & develop systems in light of probable future directions in hardware & software growth. Develop & direct design of software sys. Design sys. with respect to full life-cycle development on AS/400 RPG platform. MS in computer science, or related technical field (physics, engineering, statistics, etc.) & technical knowledge of RPG/400 life cycle development (including subfiles) demonstrated through education or experience.

C++ Software Analysts Design, & develop business logic functions behind warehouse management software system using object-oriented C++ & CORBA on a Unix platform with an Oracle database. Utilize class design & class implementation. BS in technical discipline (computer science, information technology, math, engineering or physics). 1 yr. experience with C/C++ development.

C++ Software Developers Utilize knowledge of computational theory to analyze, design, & develop software logical functions for warehouse management software system utilizing object-oriented C++ & CORBA on a Unix platform with an Oracle database. Utilize class design & class implementation. MS in computer sci., information technology, or technical discipline (such as math, engineering or physics).

Resume to: J. Lurey, Manhattan Associates. 2300 Windy Ridge Pkwy., 7th Fl. North, Box 100, Atlanta, Georgia 30339.

Sr. Manufacturing Engineer responsible for developing numerical methods for simulation in computer aided material analysis, process & device physics using simulation tools from a range of platforms (UNIX, VMS & MS_DOS). Duties will include using mathematical skills to derive formulas & equations in order to model an engineering task. Responsibilities will include solving partial differential equations using a wide range of computational skills using C, Advanced C (C++), FORTRAN, Graphical User Interfaces and LAN networking. Requirements are a Master's degree in Applied Mathematics, Physics or Electrical Engineering with 1 year experience in job offered or 1 year experience as a Software Development Engineer. 40-hr work week: 8:15 am to 5:00 pm, M-F. Salary $70,012.80 per yr. Send 2 copies of your resume to Case #72129, P.O. Box 8968, Boston, MA 02114. EOE. Applicant must be U.S. workers eligible to accept employment in the United States on a full-time basis.

Textile Data Systems Engineer. Design, develop & test software for textile data systems, including engineered fiber selection, using client/server technology. Graphical user interface (GUI) development. Evaluation of hardware for purchase. Tools: Windows 95; Windows NT; C++; Visual Basic; MFC; ODBC; Active X; SQL Server. B.S. in Computer Science as well as 1 yr. in job offered or as Programmer required. Previous experience must include: development of software for textile data systems using client/server technology; Windows NT; Windows 95; C++; Visual Basic. 40 hrs/wk, 9am-5pm. $45,000/yr. Interested applicants should apply to the nearest Job Service Office or submit a resume, including your social security number and Job Order #NC7211570 & DOT code 030.062-010, to Job Service, 700 Wade Ave., P.O. Box 27227, Raleigh, NC 27611.

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- 4+ years' client server application development.
- Experience in any/all of the following: Visual Basic, C++, Access, Powerbuilder, SQL, Oracle or NT.
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- The ability to deal at all levels of the organization and operate effectively within a commercial IS environment along with solid desktop skills is also required.
- Year 2000 experience a strong plus.
- The ability to travel regionally is required for some positions.

We also have AS400 and IMS positions in Jacksonville, FL as well as Powerbuilder and Oracle in Raleigh, NC.

Interested candidates should send/fax resume to: **Data Dimensions, Inc., 5 Mount Royal Avenue, 2nd Floor, Marlboro, MA 01752; fax: (508) 303-6766; or e-mail us at: commerce@tiac.net**

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We offer excellent growth opportunities as well as fabulous health benefits. Please forward a scanable resume to **Molly Stevens at CommonHealth, 30 Lanidex Plaza West, Parsippany, NJ 07054, fax# (973) 515-5896 or e-mail to matevens@commonhealth.com.** Visit our website at commonhealth.com. To be considered for a position you must include your salary requirements. We will respond to only those candidates who qualify. No phone calls please!

SOFTWARE ENGINEER to provide design and development of database systems using software engineering techniques and object oriented design to develop applications using Visual C++, MFC, Visual Basic, Win32 SDK, SQL with Btrieve database, Microsoft Access and MS SQL server as back end database in Windows operating systems; develop OLE server and Windows services requiring use of internal architecture, relational and object oriented databases. Require: M.S. in Computer Science/Electronics/Communications and four years experience in the job offered. Salary: $60,000 per year, 8:30 am to 5 pm, M-F, 40 hours/week. Apply by resume to: Director, Compris Technology, 1000 Cobb Place Blvd., Kennesaw, GA 30144.

Software Engineer - Design and implement Business Process Re-engineering (BPR) tools in such a way that it can be separated into objects for reuse and broad distribution (LAN/WAN). Work on the migration of the corporation's toolset to the Win32/MFC platform. Requirements include a Master's Degree in Computer Science or related field. Thorough knowledge of Microsoft Foundation Classes (MFC) for Windows, object linking and embedding, and component object model technologies in the architecture of an MFC application. No experience necessary. Applicants must have unrestricted authorization to work in the United States. Salary $65,000/year. 40 hours/wk. Respond with two copies of resume to Case #71795, P.O. Box 8968, Boston, MA 02114.

npr℠

Manager, Network Operations

Manages team of Network Operators/ Administrators. Reports to Director of Information Technology. Provides 24-hour, on-call, technical and administrative support, monitors tracks and reports system indicators. Supports multi-platform network including VAX VMS, workstations and servers (DOS, WFWWindows 95/NT, Mac, UNIX) and future adopted operating environments. Requires Bachelors degree in Computer Science or six years network experience with special emphasis on network system design, troubleshooting and performance required. Three years of network/systems administration with responsibility for a multi-platform computing environment preferred. **Job Code #175.**

Program Analyst

Develops client/server applications using design specifications with the appropriate NPR programming tools, test codes, and write programs to convert data to new formats. Develops applications using VB and SQL Server. Minimum of 3 years experience with both MS Visual Basic and MS SQL Server required. Access, SQL Server, ODBC, Client/Server development and strong database experience required. Experience with Web Server technologies preferred. **Job Code #783.**

Send/fax cover letter & resume identifying position by number and title

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Heavy experience with developing in C++ and C on any RDB (Oracle, Sybase) on Unix or NT environment. Any Quantitative Analysis skills a Plus.

Internet Technology Developers with strong application and design skills in Java, Perl, Shell Scripting, any Orbix, Corba, D/Com application work is a plus. Developers must have exp. or exposure to front and back-office environment. Financial exp. is a Plus. Good communication and presentation skills.

Please forward resumes to the attention of Laura at Smyth Associates, Inc. Email: Liztek@erols.com or Fax: 212-682-7532 or call (212) 682-9300.

COMPUTER SYSTEMS ANALYST wanted by Union, NJ IT Co. Must have 1 yr exp designing, dvlpg, implementing & testing Data Warehouse reporting systm, S.M.A.R.T. (Strategic manufacturing analysis & reporting systm) utilizing AS400 MS SQL Server (RDBMS, ODBC Drivers, Info Pump, Powerbuilder, PFC, FOREST & TREES.) BS in Comp Sci, Engg or Electronics needed. Please apply to: HR Dept., Patel Consultants Corp., 1525 Morris Ave., Union, NJ 07083.

DATABASE ADMINISTRATOR: Responsible for creation, implementation, tuning and maintenance of Very Large Production Database (VLDB) using Oracle 7.x database on AIX 4.x UNIX platform. Will consult with executive management to plan and design information retrieval strategy. Will implement database backup and recovery strategy. Requires: BS in Computer Science and 5 years experience in the design, development and implementation of business applications using ORACLE and UNIX. Must have ability to design, implement and administer a Very Large Database. 40 hrs/wk (8 to 5); $68,000/yr. Send 2 resumes/responses to: Job Order # 98-193, P.O. Box 989, Concord, NH 03302-0989.

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If you would enjoy using the latest systems and tools - in a setting that's conducive to creative thinking and innovation, we invite you to explore a future with PRC.

PROGRAMMER ANALYSTS
3+ yrs' exp developing large client/server applications and exp in Oracle DBMS environment using 1 or more of the following: Developer 2000, forms 45/5.0, pro*C, SQR, and PL/SQL.

TECHNICAL LEAD
BS; 4 yrs' IT exp; exp developing complex, large systems in an Oracle environment; and exp w/project life-cycle methodology, Unix, Oracle DBMS, front end Oracle development tools, and client/sever development.

TEAM LEADERS
BS; 5-8 yrs' exp; applications development exp (mandatory); ability to complete extremely complex tasks and projects; and background in client/server development using Oracle, Sybase or similar SQL based PC development tool.

PROJECT MANAGERS
BS; 5-8 yrs' exp; min 2 yrs' exp in IT management; applications development exp (mandatory); ability to complete extremely complex tasks and projects; and background in managing team of at least 2-8 technologists developing client/server software applications using Oracle, Sybase or similar SQL-based PC development tool.

UNIX SYSTEMS ADMINISTRATOR
System installation, configuration, and tuning. Knowledge of Client to Network connectivity issues, 5 yrs' exp working in Unix environment, and Solaris Unix background.

DATABASE ADMINISTRATOR
Install and configure Oracle server and products on Solaris 2.x, Windows 95, and Windows NT. Exp w/Developer 2000 and Designer 2000 management, security management, scripting, SQL*Net v1.x, and SQL*Net v2.x.

OPERATIONS ANALYST
Conduct knowledge transfer interviews, collect data, and coordinate the establishment of change control policies and procedures. Project Management exp, knowledge of systems/systems operations, and teaching/training aptitude.

PBX ENGINEER
In depth knowledge of PBX Switch Administration including adds, moves, and changes; ability to provide Inuity Map Audix Administration; and exp with CMS/CAS, DS3, T1, CSU/DSU, Multiplexers, Vectoring, and Cabling/cross connects.

CLIENT SERVICE ANALYST
Meet with internal and external clients to determine the functional & business requirements; perform demos and walkthroughs; and represent ISG in sales presentations. BS; 5-7 yrs' exp; and exp working with a defined project life-cycle methodology. Big 6 (or comparable) consulting exp and Oracle systems development background preferred.

For additional IS opportunities visit: www.occ.com/precision

Along with attractive compensation (no state income tax) we offer an excellent benefits package, in addition to the recognition of working for one of the fastest growing technology-based teleservices companies in the country. For immediate consideration please forward/fax/e-mail your resume and salary requirements to: **Technical Staffing, PRC, 1313 NW 167th Street, Miami, FL 33169; Fax: (305) 816-2277; E-mail: pguilliams@prcnet.com** (PLAIN ASCII TEXT FILE ONLY; MS Word preferred). EOE

PRC Precision Response Corporation

www.prcnet.com

Senior Systems Engineer. Perform all aspects of production system analysis, design, modification, and administration and source software modification for yield management system in a client-server RDBMS/UNIX environment using programming languages C, PRO*C, PL/SQL, ESQL/C, 4GL, and ISQL and databases ORACLE, INFORMIX, and SYBASE. Plan and direct development of design methodology and system functionality business and technical requirements. Manage and direct junior members of project teams. Requirements: Bachelor's degree in computer science or related field plus six years in job offered or in systems analysis and design, database analysis and administration, or software engineering and programming in a client-server environment. Stated experience must include at least four years using C, PRO*C, PL/SQL, ESQL/C, 4GL, and ISQL; ORACLE; and INFORMIX or SYBASE within the same application in a client-server RDBMS/UNIX environment. Hours: 40, M - F, 9:00 - 5:00. Salary: $65,000 per year. Job Order # GA 6227962. Submit resume to Georgia Department of Labor, 2943 N. Druid Hills Rd., Atlanta, GA 30329, or the nearest Department of Labor Field Service Office.

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Systems Analyst: To maintain & upgrade all Credit Union hardware including PCs, mainframe, terminals, printrs, & comm devices such as modems & multiplxrs; to develop & write programs using Vbasic & query languages to extract data from mbrshp DB; to maintain the integrity of mbrshp DB; to oversee LAN ops; to prepare financial rpts using Focus XP DB & acctg software; in charge of EFT & ATM depts & in-house phone system. Supervise staff. Req. BS comp sci. Must have completed a course in DB systems & in computer networks. 40 hrs wk. 9 to 5. $49,899/yr. Skokie. Must have proof of legal authority to work permanently in the US. Send resume to: IL Dept of Employment Security - 401 S. State St - 7 North, Chicago, IL 60605. Attn: Joan Sykstus. Ref #V-IL 18424-S An Employer Paid Ad. No calls - send 2 copies of both resume & cover ltr.

Software Engineer (multiple positions) (St. Louis). Programming, testing, analysis and implementation of client customized software using COBOL, CICS, and DB2 in an IBM mainframe environment. $42,000/year, 40 hours/week, Mon-Fri, 9am to 5pm. Bachelor's in Computer Science, Engineering, Math, Business or MIS and 2 years experience required in job offered.Send resumes to Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main Street, Kansas City, Missouri 64105. Job #588147. Must have proof of legal authority to work in the United States. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Rotella Capital Management is accepting resumes for Researcher, Technical Trading Systems. This position focuses on developing computerized quantitative investment strategies. Research areas: technical trading systems, portfolio algorithms, derivative pricing methods (programmed in Delphi 3). Candidates must have at least 6 mo. work experience as a software specialist or financial analyst at a major financial institution in development of quantitative investment strategies & derivatives pricing models. Masters degree required in financial engineering or computer science. Salary based on experience. Resume+cover letter to: Rotella Capital Management, Inc. 233 South Wacker Dr., Suite 9200 Chicago, IL 60606 attn: B.Rathe.

Systems Administrator needed for Detroit area warehousing/distributor of fundraising prdcts. Must have 2yr exp in database dsgn & mgmt. and dvlpg & maintaining systm for comptr s/ware & data security. Must have 2yrs in College w/comp courses. Respond to: HR Dept, Renaissance Fund Raising Co, 24745 W 8 Mile Rd, Detroit, MI 48098.

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If you would enjoy using the latest systems and tools - in a setting that's conducive to creative thinking and innovation, we invite you to explore a future with PRC.

PROGRAMMER ANALYSTS
3+ yrs' exp developing large client/server applications and exp in Oracle DBMS environment using 1 or more of the following: Developer 2000, forms 45/5.0, pro*C, SQR, and PL/SQL.

TECHNICAL LEAD
BS; 4 yrs' IT exp; exp developing complex, large systems in an Oracle environment; and exp w/project life-cycle methodology, Unix, Oracle DBMS, front end Oracle development tools, and client/sever development.

TEAM LEADERS
BS; 5-8 yrs' exp; applications development exp (mandatory); ability to complete extremely complex tasks and projects; and background in client/server development using Oracle, Sybase or similar SQL based PC development tool.

PROJECT MANAGERS
BS; 5-8 yrs' exp; min 2 yrs' exp in IT management; applications development exp (mandatory); ability to complete extremely complex tasks and projects; and background in managing team of at least 2-8 technologists developing client/server software applications using Oracle, Sybase or similar SQL-based PC development tool.

UNIX SYSTEMS ADMINISTRATOR
System installation, configuration, and tuning. Knowledge of Client to Network connectivity issues, 5 yrs' exp working in Unix environment, and Solaris Unix background.

DATABASE ADMINISTRATOR
Install and configure Oracle server and products on Solaris 2.x, Windows 95, and Windows NT. Exp w/Developer 2000 and Designer 2000 management, security management, scripting, SQL*Net v1.x, and SQL*Net v2.x.

OPERATIONS ANALYST
Conduct knowledge transfer interviews, collect data, and coordinate the establishment of change control policies and procedures. Project Management exp, knowledge of systems/systems operations, and teaching/training aptitude.

PBX ENGINEER
In depth knowledge of PBX Switch Administration including adds, moves, and changes; ability to provide Inuity Map Audix Administration; and exp with CMS/CAS, DS3, T1, CSU/DSU, Multiplexers, Vectoring, and Cabling/cross connects.

CLIENT SERVICE ANALYST
Meet with internal and external clients to determine the functional & business requirements; perform demos and walkthroughs; and represent ISG in sales presentations. BS; 5-7 yrs' exp; and exp working with a defined project life-cycle methodology. Big 6 (or comparable) consulting exp and Oracle systems development background preferred.

For additional IS opportunities visit: www.occ.com/precision

Along with attractive compensation (no state income tax) we offer an excellent benefits package, in addition to the recognition of working for one of the fastest growing technology-based teleservices companies in the country. For immediate consideration please forward/fax/e-mail your resume and salary requirements to: **Technical Staffing, PRC, 1313 NW 167th Street, Miami, FL 33169; Fax: (305) 816-2277; E-mail: pguilliams@prcnet.com** (PLAIN ASCII TEXT FILE ONLY; MS Word preferred). EOE

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Senior System Analyst: Coordinates, participates in major systems analysis and programming projects as project leader, including networks and databases administration, business application development, software/hardware installation, maintenance, support, & user training. Req: Master in Computer Science or Computer Engineering & 1 yr. exp. in job offered or related as Sys. Admin./Research Assistant/ Sys. Analyst, exp. with database/network admin, system development, software/hardware maintenance using Novell/ NetWare, SPX/IPX, TCP/IP, ArcServe, ODBC. 40 hrs/wk, $51,646.40/yr. Must have proof of legal authority to work in the United States. Send your resume to Iowa Workforce Center, 215 KeoWay, Des Moines, Iowa 50309-1727. Please refer to Job Order IA1100742. Employer paid ad.

Senior Client Server Consultant: Application design, development, testing and implementation of advanced 4GL application using Uniface as front end development tool, UNIX as operating system, and Oracle 7.0 and Sybase 10.0 as database back ends. Must be willing to travel and relocate as required (reimbursement by employer). Travel time: 75% Req'd: B.S. in Mathematics or Computer Science and 5 years experience in the job offered or in a related occupation as a Systems/Programmer Analyst. 40 hours/week. $81,800/Year. Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O. #TX0241855. Ad Paid by An Equal Opportunity Employer.

Software Engineer. Analyze, design, develop, test and document user requirements, feasibility, prototype development, and data modeling. Convert project specification into sequence of detailed instructions and logical steps for building software codes using ORACLE database, Designer/Developer 2000, Pro*C, DBA tools, JCL and SQL PL/SQL applications in client/ server environment on Windows NT on multiple hardware platforms, UNIX scheduler and operating systems. Incorporate recommendations by QA/QC for implementation, maintenance. Requires master's degree in Computer Science or Computer Application and 3 yrs of experience in the job offered. 40 hrs/wk. $63,000/yr. The Job Order # for the Job Opportunity is 588121. Send resume to: Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main St., Kansas City, Missouri 64105. Must have proof of legal authority to work in the United States.

Programmer/Analyst (multiple positions) (St. Louis). Programming, testing, analysis and implementation of client customized software using COBOL, CICS, and DB2 in an IBM mainframe environment. $60,000/year, 40 hours/week, Mon-Fri, 8am to 5pm. Bachelor's in Computer Science, Engineering, Math, Business or MIS and 2 years experience required in job offered.Send resumes to Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main Street, Kansas City, Missouri 64105. Job #588127. Must have proof of legal authority to work in the United States. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

Software Engineer to develop engineering s/ware systems including telecommunication & electrical fields; GUI programming like MS-Windows; perform advanced client/server environments & d/bases in Windows; develop communication systems, including networking & client server systems; design, analyze & develop d/base system using MS Visual C++, MS Access, Oracle & MS Visual Basic, design s/ware applications including GUI & d/base design; program s/ware applications for communications; design, analyze & develop relational high speed communications system; use latest s/ware engineering technologies, relational d/base management system concepts like referential integrity, relational d/base & network models; Reqs. Bachelor's in Comp. Sci., Comp., Electrical or Electronics Engg., or Comp. Info. Systems, 1 yr exp in job offered or 1 yr related exp such as S/ware Engr., Grad. Research Assist. or Consultant. At least 6 mos of related exp must include designing & developing GUI & implementing simulation program & developing CAD systems; $59,814/yr, 40 hrs/wk, OT as reqd 8a-5p. Send 2 copies of resume to Dept. of Labor, Licensing or Regulation, 1100 N. Eutaw St., Room 201, Baltimore, MD 21201 & Refer to Ref. #MD9680268

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Employment Opportunities at Central WA Hospital

Central WA Hospital, a 176-bed acute care referral facility located in Wenatchee, WA is seeking motivated, professional individuals with excellent communication & customer service skills to join our expanding Information Systems Team. The following opportunities are available:

Programmer/Analyst - responsible for development & enhancement of business applications. Degree in computer science, business or related field, with min. 5 yrs. exp. working in the AS/400 environment, the RPG, Control and Display file language. HBOC or hospital related exp. desired.

PC Analyst - provides PC support, installation, repair & maintenance. Troubleshoots CWH's mixed network environment with AS/400, Ethernet, LAN, Internet connectivity & regional WAN connections. College or technical school certification in PC curriculum, 2-4 yrs. exp. or equivalent combination of education or exp. required. Knowledge of DOS, Windows & Windows 95 required. AS/400, Client Access & Windows NT desired.

Programmer - provides support to the hospital departments & affiliated facilities to assist them in performing functions more efficiently through the optimal use of the IS resources. College or technical school certification with 2-4 yrs. exp. in the AS/400 environment, the RPG, Control & Display field language.

Senior System Operater - responsible for operation of computer system with advanced knowledge of system applications, higher level of end user support & problem solving. Involved in development of procedures, training & scheduling of system operators. College or technical school certificate preferred with 3-5 yrs. exp. on AS/400, PC network.

Interested applicants should mail, fax or e-mail resume to Jo Wavra, Human Resource Department, Central WA Hospital, 1300 Fuller St., Wenatchee, WA 98801, (fax) 509-665-6032, e-mail jwavra@cwhs.com, EOE.

Central Washington Hospital

Computer Information Systems

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Department Head

Purdue University Calumet has a position of Department Head in Information Systems & Computer Programming. A Ph.D. degree (ABDs in advanced stages will be considered), in computer science/information systems or related area from an accredited University or an equivalent combination of education and experience required as well as a significant record of scholarly and professional activities.

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Tenure track faculty positions beginning in the 1998-1999 academic year. Master's degree is CIS or related field, or Master's degree requirements able to be completed within the first year of employment. In addition, significant non-academic, computer information systems business/industry experience is required.

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Review of applications will begin June 29, 1998, and will continue until positions are filled.

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Computer Consultant/Jr. Project Manager (Chicago): Analyze business procedures and computer systems and prepare software solutions to meet client needs. Lead team of 3-4 Computer Consultants in the design, development, testing and implementation of customized business systems software applications. Discuss systems goals and proposed software design with team of consultants. Delegate development responsibilities to computer consultants depending on individual experience and skill level. Troubleshoot project problems. In providing technical solutions, work with the following computer-based methodologies: IBM 3090 mainframe, MVS, CICS, VSAM, JCL, DB2, COBOL, POWERBUILDER, C Easytrieve, IDMS, CSP, and IMS. Evaluate and improve effectiveness of data handling systems and develop specifications for logical and mathematical operations. Plan and prepare technical reports, memoranda and instructional materials for operational systems software. Prepare status reports for client. 40 hrs/wk, 8:30am to 5pm; $60,000/yr. Must have a Bachelor's degree in Computer Science or a related field which may include engineering, math, physics, business, economics or MIS. Must have 4 years experience in the job offered or 4 years experience as a Computer Software Development Specialist which may include systems analyst, programmer, programmer analyst, software engineer or computer consultant. Through education or work experience must have acquired software development skills in each of the following computer-based methodologies: 1) MVS; 2) DB2; 3) COBOL; 4) CICS; 5) Powerbuilder; 6) CSP; 7) C; 8) IMS; 9) IDMS. Must be willing to travel to client sites throughout the U.S. 25-50% of the time. Must have proof of legal authority to work permanently in the U.S. Send resume/letter in dupl. to: Illinois Dept. of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605, Attn: Leila Jackson, Ref# V-IL 17509-J. An employer paid Ad. No calls.

Software Engineers (two openings) sought. Responsible for support of client critical business applications; coordinates and investigates development of solutions for technical problems; monitors critical business applications to assess areas for improvement; and implements technical solutions. Applicants must have a Master's degree or equivalent in Computer Science, Engineering, or a related field plus 3 years of experience in the Job Offered or 3 years experience in System Analysis and Database Design. Such experience must include 2 years experience in Oracle and UNIX. Will accept a Bachelor's degree or equivalent plus 5 years of progressively responsible experience in lieu of a Master's and 3 years of experience. Hours: M-F, 8-5; 40 hrs/wk. Salary $65,000/yr. Must be willing to travel to various client sites throughout the U.S. and to commute within a 60-mile radius of home. If interested, please send two resumes to: Case # 72123, P.O. Box 8968, Boston, MA 02114.

TPF Programmer/Analyst. 40 hrs/wk, 9am-5pm. $57,460/yr. Design, test & code software applications for options/securities exchange. Conduct beta testing for program design & coding. Interact with other software groups, operation & user groups & staff to maintain design & quality standards. Maintain applications & make enhancements. Troubleshoot system. Conduct design & program walkthroughs. Tools: IBM 3090; AMD 5995; PC/LAN; TPF; VM/CMS; MVS TSO/ISPF; BAL-IBM Assembler; C; Step-by-Step Trace. B.S. in Computer Science or Engr'g as well as 2 yrs. in job offered or Senior Programmer required. Prior experience must include: TPF; BAL-IBM Assembler; VM/CMS. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605. Attention: Leila Jackson, Reference #V-IL-18135-J. NO CALLS. An Employer Paid Ad.

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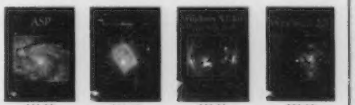

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The Week in Stocks

Gainers

PERCENT

Progress Software Corp. (H)	31.9
J.D. Edwards Co.	27.4
PSINet	19.8
Amazon.com (H)	19.7
Lycos Inc.	19.2
Forte Software	18.3
Netscape Comm. Corp.	18.3
Infoseek Corp.	18.0

DOLLAR

Yahoo! Inc. (H)	15.00
Amazon.com (H)	12.00
America On-Line (H)	10.00
Lycos Inc.	9.75
Excite, Inc.	9.56
Progress Software Corp. (H)	9.56
Microsoft Corp.	9.25
J.D. Edwards Co.	8.88

Losers

PERCENT

Data Race Inc. (L)	-28.0
Stratus Computer Inc. (L)	-25.8
FTP Software Inc. (L)	-21.5
Quarterdeck Corp. (L)	-19.5
Sequent Computer Sys. (L)	-18.8
Intelligent Info. Systems (L)	-18.8
Iomega Corp.	-16.3
Northern Telecom Ltd.	-16.1

DOLLAR

Northern Telecom Ltd.	-10.19
Stratus Computer Inc. (L)	-8.69
IBM	-7.75
Micro Focus	-4.06
Gateway 2000 Inc.	-3.19
Sequent Computer Sys. (L)	-2.81
Hewlett Packard Co.	-2.75
Pegasus Systems	-2.50

INDUSTRY ALMANAC

PeopleSoft's growing pains

The job for PeopleSoft, Inc. is to keep from slowing down. Revenue for services and software licenses at the Pleasanton, Calif.-based company grew 76% last year, to $705 million, well above the industry average, according to International Data Corp. (Total revenue was $815 million). PeopleSoft reported $108.3 million in profits in 1997 — a threefold increase from the previous year.

Similarly, the company's stock price climbed steadily. But then it hiccuped. In April, PeopleSoft reported services revenue growing at a faster rate than license fees in the first quarter. Analysts say that shift made investors nervous; the stock has since gone down (see chart).

Analysts credit PeopleSoft's growth to a good product line, particularly in human resources and financial applications, and a strong marketing presence. But PeopleSoft's rate of growth can't last, analysts say, unless it succeeds in overseas markets, in selling manufacturing applications and in developing vertical markets, such as insurance and retail.

"They can't gain share forever," says George Gilbert, an equity analyst at Deutsche Bank Securities, Inc. in New York. But, so far, the company hasn't reached a limit, he says.

PeopleSoft moved into overseas markets with its recent release of PeopleSoft 7.5, which included support for foreign currencies and languages. It is developing its vertical markets by acquiring niche software companies, most recently Tri-Mark Technologies, Inc., a Lincolnshire, Ill.-based maker of financial software for insurers.

But PeopleSoft faces challenges. It is well behind SAP AG and The Baan Co. in developing manufacturing markets. "It's going to be a challenge for them to expand that business," says Robert Kugel, an equity analyst at FAC Equities-First Albany Corp. in Albany, N.Y. — Patrick Thibodeau

A STOCK PRICE HICCUP

Over the past year, PeopleSoft's stock price has climbed. But in late April shareholders lost some ground after the company said revenue from services was growing at a faster rate than license fees.

Exch	52-Week			June 19 2PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**UP 0.4%**
COMS	59.69	22.94	3 COM Corp.	26.50	2.63	11.0
AIT	50.25	30.11	AMERITECH Corp.	44.56	0.69	1.6
ASND	56.75	22.00	Ascend Communications	49.94	1.06	2.2
T	68.50	34.00	AT & T	63.13	0.81	1.3
BNYN	13.38	1.75	Banyan Systems Inc.	6.84	-0.16	-2.2
BAY	41.88	21.38	Bay Networks Inc.	30.00	2.31	8.4
BEL	106.00	68.00	Bell Atlantic Corp.	96.81	1.69	1.8
BLS	69.38	43.31	Bellsouth Corp.	68.19	0.38	0.6
BRKT	22.75	9.25	Brooktrout Technology	14.56	-1.19	-7.5
CS	38.50	11.44	Cabletron Systems	13.50	1.44	11.9
CGRM	21.88	8.56	Centigram Communications	10.00	-1.88	-15.8
CSCO	82.47	43.38	Cisco Systems Inc. (H)	82.25	4.25	5.4
CMNT	6.13	3.31	Computer Network Tech.	5.00	-0.19	-3.6
CNCX	30.00	7.88	Concentric Network Corp.	24.81	1.81	7.9
DIGI	32.75	16.50	DSC Communications	27.47	-0.09	-0.3
FORE	74.88	13.25	FORE Systems Inc.	24.25	1.81	8.1
GDC	8.38	3.25	General Datacomm Inds.	4.19	0.31	8.1
GSX	53.00	36.63	General Signal Networks	37.81	-1.56	-4.0
GTE	64.38	40.50	GTE Corp.	56.19	-0.50	-0.9
LU	79.00	34.63	Lucent Tech.	72.38	0.19	0.3
MADGF	9.19	3.25	Madge Networks NV	4.63	0.19	4.2
MCIC	55.56	27.31	MCI Communications Corp. (H)	55.56	7.38	15.3
NETM	5.25	2.09	NetManage Inc.	2.69	-0.44	-14.0
NTRX	3.50	0.63	Netrix Corp.	2.19	-0.31	-12.5
NCDI	14.13	5.88	Network Computing Devices	6.88	-1.00	-12.7
NWK	22.38	11.63	Network Equipment Tech.	15.63	-0.94	-5.7
NN	69.38	18.94	Newbridge Networks Corp.	22.19	-0.06	-0.3
NT	69.25	39.69	Northern Telecom Ltd.	53.13	-10.19	-16.1
NOVL	13.44	6.28	Novell Inc. (H)	12.88	1.25	10.8
ODSI	14.50	5.19	Optical Data Systems Inc.	5.50	-0.56	-9.3
PCTL	13.50	5.63	Picturetel Corp.	8.63	0.69	8.7
OPEN	3.50	0.96	Proteon Inc. (L)	1.13	0.03	2.9
RACO	4.13	1.00	Racotek Inc.	2.84	-0.03	-1.1
RADS	29.38	13.63	Radiant Systems Inc	15.97	1.97	14.1
VRTL	11.63	4.25	Retix (L)	4.50	-0.75	-14.3
SBC	46.56	28.75	SBC Communications	39.88	0.44	1.1
SFA	26.13	14.00	Scientific Atlanta Inc.	21.69	0.69	3.3
SHVA	16.44	8.06	Shiva Corp.	9.31	1.19	14.6
FON	75.63	44.00	Sprint Corp.	71.75	1.19	1.7
QWST	41.06	13.19	QWest Communications	29.81	-0.88	-2.9
SMSC	18.13	8.00	Standard Microsystems Corp.	9.25	-1.00	-9.8
USW	58.00	35.38	U S West Inc.	49.19	-1.56	-3.1
XIRC	18.00	8.63	Xircom	13.94	-0.56	-3.9
XYLN	31.31	13.38	Xylan Corp.	27.13	3.31	13.9
PCs and Workstations						**OFF -0.9%**
AAPL	31.63	12.75	Apple Computer Inc.	26.81	-1.06	3.8
CPQ	39.75	19.63	Compaq Computer Corp.	27.56	-0.44	-1.6
DELL	98.50	28.06	Dell Computer Corp.	85.06	3.88	4.8
GTW	59.25	25.06	Gateway 2000 Inc.	44.50	-3.19	-6.7
HWP	82.38	52.50	Hewlett Packard Co.	57.50	-2.75	-4.6
MUEI	21.00	8.44	Micron International Inc.	10.63	-0.94	-8.1
NIPNY	74.00	41.94	NEC America (L)	46.38	2.50	5.7
SGI	30.31	10.94	Silicon Graphics	12.06	0.44	3.8
SUNW	53.31	30.38	Sun Microsystems Inc.	42.88	0.88	2.1
Large Systems						**OFF -4.5%**
DGN	37.94	13.38	Data General Corp.	15.06	-0.19	-1.2
DEC	62.63	34.19	Digital Equipment Corp.	56.69	0.00	0.0
IBM	129.31	87.63	IBM	107.63	-7.75	-6.7
MDCD	6.63	3.13	Meridian Data Inc.	5.06	0.38	8.0
NCR	38.50	25.63	NCR Corp.	32.38	-2.38	-7.1
PRCM	18.63	8.13	ProCom Technology, Inc. (L)	6.50	-0.38	-5.5
SQNT	31.25	12.19	Sequent Computer Sys. (L)	12.19	-2.81	-18.8
TEXM	6.00	2.50	Texas Micro Inc	3.75	0.13	3.4
SRA	60.75	23.69	Stratus Computer Inc. (L)	24.94	-8.69	-25.8
UIS	26.75	6.88	Unisys Corp.	25.75	2.00	8.4
Software						**UP 1.6%**
ADBE	51.13	33.50	Adobe Systems Inc.	39.31	-0.75	-1.9
AMSWA	15.63	6.88	American Software Inc.	7.38	-0.25	-3.3
APLX	12.50	3.56	Applix Inc. (L)	4.25	0.25	6.3
ARSW	53.25	27.19	Arbor Software	32.00	0.38	1.2
ARDT	15.88	6.63	Ardent Software	11.13	-0.25	-2.2
ARSC	36.38	17.75	Aris Corp.	30.38	3.25	12.0
ADSK	51.13	30.50	Autodesk Inc.	41.56	-0.69	-1.6
BMCS	51.50	25.25	BMC Software Inc.	47.13	2.38	5.3
BOOL	26.00	13.94	Boole and Babbage	23.94	-1.06	-4.3
BOBJY	20.00	6.63	Business Objects	16.38	1.00	6.5
CAYN	4.25	0.94	Cayenne Software Inc.	1.50	0.00	0.0
CNTR	3.31	0.88	Centura Software	2.00	-0.09	-4.5
CHKPF	50.50	21.75	Checkpoint Software	27.44	1.19	4.5
COGNF	35.00	17.63	Cognos Inc.	25.00	0.81	3.4
CA	61.50	34.88	Computer Associates	58.00	0.44	0.3
CPWR	53.38	22.63	Compuware Corp.	49.13	5.25	12.0
CSRE	13.50	4.25	Comshare Inc.	8.25	-0.13	-1.5
COSFF	6.69	1.40	Corel Corp.	2.25	0.28	14.3
DWTI	5.38	2.13	Dataware Technologies Inc.	2.94	-0.06	-2.1
DCTM	59.63	19.75	Documentum, Inc.	52.50	5.38	11.4
FILE	30.13	6.75	Filenet Corp.	24.13	-0.38	-1.5
FRTE	16.56	3.69	Forte Software	5.25	0.81	18.3
FTPS	5.00	1.38	FTP Software Inc. (L)	1.59	-0.44	-21.5
GPSI	39.75	20.38	Great Plains Software, Inc.	33.25	0.75	2.3
HUMCF	54.25	24.38	Hummingbird Comm. Ltd.	26.13	-1.63	-5.9
HYSW	48.63	18.88	Hyperion Software Corp.	29.69	0.31	1.1
IRIC	20.00	12.50	Information Resources	16.13	-1.06	-6.2
IFMX	12.44	4.00	Informix Corp.	7.72	0.78	11.3
INPR	12.19	5.88	Inprise Corp.	7.44	-0.44	-5.6
INGR	14.19	7.19	Intergraph Corp.	9.00	-0.44	-4.6
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ISLI	21.25	8.00	Intersolv Inc.	17.00	2.31	15.7
INTU	54.94	22.63	Intuit Inc.	50.03	3.41	7.3
JDEC	42.50	24.88	J.D. Edwards Co.	41.25	8.88	27.4
TLC	29.06	7.88	Learning Co. (The)	24.94	-0.88	-3.4
MANU	66.38	20.50	Manugistics Group, Inc.	23.63	1.56	7.1
MAPS	14.25	8.38	MapInfo Corp.	10.38	-1.38	-11.7
MATH	4.63	2.38	MathSoft	3.63	0.00	0.0
MENT	13.13	8.13	Mentor Graphics	10.56	-0.09	-0.9
MIFGY	60.63	26.13	Micro Focus	34.50	-4.06	-10.5
MCXI	14.00	5.50	Micrografx Inc.	12.13	0.63	5.4
MSFT	99.13	59.00	Microsoft Corp.	93.75	9.25	10.9
OBJS	5.25	0.44	ObjectShare, Inc.	2.25	-0.06	-2.7
OMTL	15.00	7.13	Omtool Ltd	8.81	-0.69	-7.2
ORCL	42.13	17.75	Oracle Corp.	24.38	-0.34	-1.4
PMTC	35.25	19.06	Parametric Technology	30.88	1.63	5.6
PSFT	57.44	24.88	Peoplesoft	41.75	-0.88	-2.1
PTEC	18.38	8.88	Phoenix Technologies	10.25	1.06	11.6
PSQL	25.00	7.63	Platinum Software	19.81	0.19	1.0
PLAT	31.13	12.63	Platinum Technology	24.06	-1.19	-4.7
PRGS	41.63	15.75	Progress Software Corp. (H)	39.50	9.56	31.9
RNBO	30.00	16.63	Rainbow Technologies Inc.	21.38	-0.63	-2.8
REDB	11.63	4.25	Red Brick Systems Inc. (L)	4.50	-0.75	-14.3
ROSS	5.40	2.00	Ross Systems, Inc.	4.38	0.19	4.5
SCDC	7.25	3.13	SCD Inc.	4.81	0.38	8.5
SDTI	44.38	17.75	Security Dynamics Tech. (L)	17.75	-1.25	-6.6

Exch	52-Week			June 19 2PM	Wk Net Change	Wk Pct Change
SSW	29.50	15.13	Sterling Software Inc.	26.50	0.38	1.4
SDRC	30.00	15.25	Struct. Dynamics Research	22.00	0.31	1.4
SYBS	23.63	6.13	Sybase Inc. (L)	6.94	0.56	8.8
SYMC	32.63	17.88	Symantec Corp.	24.75	0.63	2.6
SNPS	47.13	29.13	SynOpsys	41.56	-0.25	-0.6
SSAX	17.63	6.38	System Software Assoc. (L)	6.63	-0.06	-0.9
SYSF	14.50	1.06	Systemsoft Corp.	1.50	0.00	0.0
BAANF	55.50	28.56	The Baan Co.	39.75	-1.25	-3.0
TRUV	5.19	1.56	Truevision Corp. (L)	1.56	-0.19	-10.7
VIAS	69.25	12.38	Viasoft Inc.	13.50	0.50	3.8
VSIO	50.88	26.50	Visio Corp.	41.38	-2.13	-4.9
WALK	20.44	11.88	Walker Interactive Systems	13.25	-1.00	-7.0
WALL	28.25	10.13	Wall Data Inc.	11.50	0.75	7.0
WANG	32.25	18.63	Wang Laboratories Inc.	24.00	2.00	9.1
Internet						**UP 7.6%**
AMZN	82.50	8.88	Amazon.com (H)	72.88	12.00	19.7
AOL	97.88	26.69	America On-Line (H)	95.06	10.00	11.8
ATHM	47.00	16.63	At Home Corp.	35.88	1.13	3.2
EDFY	22.13	8.31	Edify Corp. (L)	8.63	-0.75	-8.0
XCIT	93.31	12.50	Excite, Inc.	73.63	9.56	14.9
SEEK	45.00	4.38	Infoseek Corp.	33.25	5.06	18.0
LCOS	79.13	11.19	Lycos Inc.	60.63	9.75	19.2
NSCP	49.50	14.88	Netscape Comm. Corp.	27.94	4.31	18.3
NSOL	58.00	11.75	Network Solution Inc	41.13	2.44	6.3
OMKT	29.13	8.88	Open Market Inc.	15.63	0.19	1.2
PEGS	31.00	12.50	Pegasus Systems	25.50	-2.50	-8.9
PSIX	15.25	4.25	PSINet	12.50	2.06	19.8
QDEX	3.40	0.94	Quarterdeck Corp. (L)	1.03	-0.25	-19.5
SCUR	15.25	5.38	Secure Computing Corp.	9.13	0.00	0.0
SPYG	15.38	4.06	Spyglass Inc.	11.19	1.25	12.6
YHOO	136.38	21.75	Yahoo! Inc. (H)	127.50	15.00	13.3
Semiconductors						**UP 4.4%**
AMD	42.75	16.38	Advanced Micro Devices (L)	17.69	0.81	4.8
ADI	39.63	22.00	Analog Devices Inc. (L)	23.06	0.63	2.8
CRUS	17.75	8.88	Cirrus Logic	9.13	0.13	1.4
CY	18.94	7.38	Cypress Semiconductor Corp.	7.88	0.50	6.8
INTC	102.00	65.66	Intel Corp.	68.94	1.69	2.5
LSCC	74.50	25.63	Lattice Semiconductor	27.25	0.06	0.2
LSI	36.75	18.63	LSI Logic Corp.	23.75	1.31	5.8
MCRL	46.88	21.38	Micrel Semiconductor Inc.	29.13	0.38	1.3
MU	60.06	20.06	Micron Technology (L)	23.75	2.94	14.1
MOT	90.50	48.56	Motorola Inc. (L)	49.63	0.13	0.3
NSM	42.88	13.25	National Semiconductor (L)	13.25	-1.56	-10.5
RMBS	86.75	35.50	Rambus Inc.	39.88	4.00	11.1
TXN	71.25	39.63	Texas Instruments	54.94	7.25	15.2
VLSI	38.69	14.56	VLSI Technology (L)	16.63	1.50	9.9
XLNX	57.13	28.50	Xilinx	32.63	0.25	0.8
Peripherals and Subsystems						**OFF -2.4%**
ADPT	54.25	12.50	Adaptec Inc. (L)	15.19	1.88	14.1
APCC	34.38	18.50	American Power Conversion	28.38	1.06	3.9
ANDA	2.81	1.00	Andataco Inc.	1.44	-0.19	-11.5
CREAF	29.38	11.00	Creative Technology Ltd. (L)	12.06	-0.75	-5.9
RACE	15.38	0.56	Data Race Inc. (L)	0.56	-0.22	-28.0
DTM	13.69	7.88	Dataram Corp.	11.63	-0.13	-1.1
EMC	47.63	18.88	EMC Corp.	45.38	3.75	9.0
EMLX	19.75	5.31	Emulex Corp. (L)	5.69	-0.81	-12.5
ESCC	35.88	21.44	Evans and Sutherland	23.38	0.00	0.0
EXBT	14.13	5.63	Exabyte	6.81	-0.75	-9.9
IISFD	4.69	1.53	Intelligent Info. Systems (L)	1.63	-0.38	-18.8
IOM	16.75	5.44	Iomega Corp.	5.44	-1.06	-16.3
KMAG	25.50	5.94	Komag Inc. (L)	6.25	-0.06	-1.0
MTSI	34.88	15.00	Micro Touch Systems Inc.	15.63	0.94	6.4
MTIC	17.88	4.25	MTI Technology Corp.	8.81	0.50	6.0
AQM	23.06	2.25	QMS Inc.	4.31	0.13	3.0
QNTM	43.25	17.75	Quantum Corp.	18.44	-1.13	-5.8
RDUS	8.13	1.88	Radius Inc.	2.38	-0.03	-1.3
SEG	50.50	17.75	Seagate Technology	20.81	0.75	3.7
SOS	14.00	3.63	Storage Computer Corp. (L)	4.00	-0.25	-5.9
STK	88.75	41.75	Storage Technology	78.13	-0.31	-0.4
TEK	48.19	33.94	Tektronix Inc. (L)	35.81	1.75	5.1
WDC	54.75	10.25	Western Digital Corp.	11.38	0.81	7.7
XRX	115.00	66.19	Xerox Corp.	95.31	0.75	0.8
Services						**UP 2.4%**
AMSY	30.00	17.63	American Mgmt. Systems	27.81	2.47	9.7
ANLY	36.50	20.88	Analysts Int. r.	28.38	0.19	0.7
AUD	70.69	26.56	Auto Data Processing	69.31	4.38	6.7
CATP	57.50	30.25	Cambridge Tech. Partners	54.50	4.88	9.8
CEN	61.38	32.13	Ceridian Corp.	57.69	2.13	3.8
CDO	23.25	12.25	Comdisco Inc.	16.88	-0.44	-2.5
CPU	58.00	14.50	CompUSA Inc.	16.13	0.38	2.4
CHRZ	53.50	25.75	Computer Horizons	34.56	0.19	0.5
CSC	59.88	33.63	Computer Sciences (H)	59.06	3.63	6.5
TSK	49.38	27.00	Computer Task Group	30.63	-0.13	-0.4
EGGS	12.75	3.75	Egghead Discount Software	8.56	1.25	17.1
EDS	50.88	29.56	Electronic Data Systems Corp.	35.63	0.31	0.9
ICO	39.63	22.63	Inacom Corp.	30.75	-0.06	-0.2
KEA	59.44	24.00	Keane Inc.	48.50	0.13	0.3
MICA	29.75	10.06	Micehouse Inc.	13.47	0.13	0.9
PAYX	40.63	21.69	Paychex (H)	40.19	2.63	7.0
PMS	43.50	23.50	Policy Management Sys.	40.13	-1.06	-2.6
REY	24.00	15.69	Reynolds and Reynolds	17.88	-0.88	-4.7
SAPE	57.88	21.75	Sapient Corp.	42.25	1.00	2.4
SCBI	14.75	6.50	SCB Computer Tech. Inc.	11.00	-1.25	-10.2
SEIC	76.00	23.75	SEI Corp.	63.75	2.50	4.1
SMS	82.69	47.50	Shared Medical Systems	69.50	1.69	2.5
SSPE	24.25	10.00	Software Spectrum Inc.	19.13	-0.63	-3.2
SDS	40.00	22.31	Sungard Data Systems	34.00	0.56	1.7
SYNT	39.88	5.69	Syntel, Inc.	22.88	0.25	1.1
VST	17.25	9.88	VanStar Corp.	14.81	1.13	8.2

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Big business skimps

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After analyzing more than 1,000 10-K reports filed since February by U.S. companies across 12 vertical industries, Giga researchers found that only one in four contained any of the project cost estimates the SEC requested.

Earlier this month, the SEC announced plans for more stringent disclosure guidelines within the next two months, following its appraisal of more than 1,000 publicly held companies. That study revealed that many didn't provide enough information (see story, page 39).

The Giga study also found that only 4% of the companies studied had disclosed any information about their contingency plans in the event of any year 2000 failures, and only 25% of the companies whose 10-K and 10-Q filings were analyzed mentioned plans to assess the impact of embedded systems in heating and air-conditioning systems, security systems and other non-information technology devices.

"Without question, lawyers are recommending companies to be as vague as possible" in their disclosures, said Ann Coffou, an analyst at Giga in Norwell, Mass. [CW, April 27]. Several IS managers who took part in a recent *Computerworld* CIO luncheon agreed that the "great Y2K clam-up" is under way.

That's because the SEC's Staff Legal Bulletin No. 5 on year 2000 reporting requirements lacks specific guidelines for companies to follow. For example, the SEC inadvertently lets companies define and disclose what they consider to be "material" millennium project costs.

That has led many companies to file boilerplate disclosures with as little information about their projects as possible, Coffou said.

And that helps explain the terse 10-K filings Giga reviewed.

Bob Evans Farms, a Columbus, Ohio-based pork sausage distributor and restaurant chain, has opted not to disclose year 2000 project costs in its 10-K and 10-Q forms sent to the SEC. The company is running mostly new software that's already year 2000-compliant, a spokeswoman said, so the costs to fix remaining software "are immaterial."

She added that the company hasn't withheld project costs in fear of Wall Street's reaction "since it's such a small expenditure," a figure she declined to reveal.

LEGAL INPUT

"Certainly our legal people have a say in how we word our disclosures," said Michael J. Whelan, director of investor relations at Beckman Coulter, Inc., a $1.8 billion laboratory products maker in Fullerton, Calif.

In a 10-Q form sent to the SEC following its first quarter ended March 31, Becton, Dickinson & Co. revealed that it plans to spend $6 million to $10 million "to modify and replace its existing computer software" to ensure year 2000 compliance.

However, the Franklin Lakes, N.J.-based medical supplies maker didn't disclose any specific information about its contingency plans and made only passing reference about evaluating its infrastructure.

Whether and how much publicly held companies should disclose has been a double-edged sword. Companies that file a lot of millennium project information are doing their best to communicate project risks to their shareholders.

But in doing so, they risk scaring Wall Street analysts, who in turn could downgrade their stocks.

"I'm not sure how deep [companies] should have to drill down to disclose that much information," said Doug Ey, a partner in the year 2000 practice at Charlotte, N.C.-based law firm Smith Helms Mulliss & Moore LLC. Ey advises manufacturing, retail and other types of companies about making SEC disclosures.

But for those companies that don't disclose information, there is the specter of shareholder lawsuits down the road.

Until the SEC gets tough, investment managers "are [mistakenly] taking a CEO's or CFO's word about how ready they are" and not pressing public companies harder about possible date-related problems, said Edward Yardeni, chief economist at Deutsche Bank Securities in New York. □

Computerworld staff writer Matt Hamblen contributed to this report.

HOW DIFFERENT INDUSTRIES RANKED IN YEAR 2000 PROGRESS

INDUSTRY SECTOR (Number of disclosures)	DISCLOSURES RATED SATISFACTORY IN ADDRESSING 3 OR MORE CRITICAL RISK EXPOSURES*	DISCLOSURES THAT MENTION A REPLACEMENT/UPGRADE STRATEGY
Financial services (124)	30%	56%
Services (121)	20%	62%
Utilities (45)	40%	70%
Transportation (45)	20%	75%
Consumer cyclicals (80)	13%	40%
Technology (108)	12.10%	22%

**Information systems, embedded systems, supply-chain actions and contingency plans*

Base: More than 1,000 SEC 10-K filings across 12 industry sectors

Source: Giga Information Group, Norwell, Mass.

INDUSTRY SPENDING ON YEAR 2000 FIXES

INDUSTRY SECTOR (Number of disclosures)	% THAT REPORTED THEIR YEAR 2000 COST ESTIMATES	AVERAGE TOTAL YEAR 2000 COST ESTIMATES
Financial services (124)	50.8%	$45.3M
Utilities (45)	41.9%	$32M
Consumer cyclicals* (80)	36%	$30.4M
Transportation (45)	35%	$12.7M
Consumer noncyclicals (68)	29.1%	$14.2M

**Seasonal goods*

Base: Securities and Exchange Commission 10-K filings across industry sectors

Source: Giga Information Group, Norwell, Mass., "Best Practices in U.S. Year 2000 Financial Disclosures"

GM's year 2000 assurances under scrutiny

CONTINUED FROM PAGE 1

teroperability of its data networks with 100,000 parts suppliers.

Despite such odds, a company spokesman last week boldly stated that the year 2000 problem won't have a significant impact on GM's business.

"We've got a pretty heavyweight year 2000 program because we have to," said John Ahearne, a spokesman for GM's information systems, based in Detroit. GM has already finished its assessment of devices and systems and is working with critical suppliers to find workarounds if it can't be sure their year 2000 programs will work.

Despite that confidence, GM landed on a list of other large companies that came under congressional fire recently for providing inadequate year 2000 information to investors in Securities and Exchange Commission (SEC) filings.

SOME QUESTIONS

One economist who testified wondered why GM would declare in its most recent annual report that it expects to spend $360 million to $500 million and have modifications completed by Dec. 31, 1998, yet didn't mention anything about year 2000 in its subsequent quarterly report.

Testing will begin next year. That level of spending over several years is a small portion of the automaker's $4 billion annual information technology budget.

In an interview, economist Edward Yardeni at Deutsche Bank Securities in New York said he was "amazed" GM would make such statements, given that GM Chief Information Officer Ralph Szygenda was quoted in a *Fortune* article in April saying there are "catastrophic problems" related to year 2000 in every GM plant.

Economist Edward Yardeni said he was "amazed" GM would make such statements

Ahearne, who attended the *Fortune* interview, said the CIO's comment was taken out of context. When he first visited plants in June 1996 after signing on as CIO, Szygenda said, "This stuff has to be fixed, or it could be catastrophic," Ahearne recalled. Szygenda wasn't available to comment last week, and all questions were referred to Ahearne.

Since 1996, GM has made "tremendous" progress, having assessed the problem last year and devoted this year to remediation, Ahearne said. "I don't really think there's the potential for anything catastrophic to happen," he said.

Yardeni said it is contradictory that GM could devote most of last year to assessment and expect remediation to last only a year, as stated in SEC filings.

But Ahearne said that timetable is possible because assessment was done by teams on and off throughout last year.

Analyst Steven L. Hock, president of Triaxsys Research LLC in Missoula, Mont., said GM ranks at the bottom among companies in the Fortune 250 for the percentage of year 2000 funds already spent compared with the estimated total project cost.

GM isn't hiding information by not including year 2000 information in its quarterly report, Ahearne said.

One area of uncertainty about year 2000 readiness is addressed in GM's annual report regarding how GM communicates with its 100,000 parts suppliers. GM is checking and testing electronic data interchange interfaces with suppliers at 40,000 critical supply sites, Ahearne said. □

DEC is dead; DECUS lives on

By Jaikumar Vijayan

DIGITAL MAY HAVE gone out of business, but it's business as usual for its user group.

Compaq Computer Corp.'s acquisition of Digital Equipment Corp. will have no immediate repercussions for the Digital Equipment Computer Users Society (DECUS), said Joseph Pollizzi, president of DECUS in Baltimore.

DECUS still plans to meet in Los Angeles in October, and chapters worldwide will go ahead with plans for meetings and conferences, Pollizzi said.

Long an influential voice in the Digital community, DECUS is one of the industry's oldest and most popular user groups, with 50,000 global members.

But it is unknown what role DECUS will have in the merged company and what funding Compaq will provide DECUS in the long term, Pollizzi cautioned. Digital had partially funded DECUS, but Compaq doesn't sponsor a user group.

DECUS' Joseph Pollizzi

"Compaq sees DECUS as an agent to help them understand how to work with Digital customers," Pollizzi said. "The impression we have got from them so far is that they are absolutely interested" in having DECUS continue.

Compaq recently started working with DECUS directors, said Enrico Pesatori, Compaq's vice president of worldwide marketing. John Rose, who heads the firm's enterprise server group, met with DECUS directors last week in Providence, R.I., Pesatori said. And DECUS is promoting the appearance of Compaq executives at the Los Angeles conference.

It is in Compaq's interest to support groups such as DECUS because they represent a great marketing opportunity for Compaq, said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass.

But the International Tandem Users Group, which represents users of Tandem systems, hasn't yet heard from Compaq.

"We don't know if we are even on their radars," said Janice Reeder-Highleyman, the group's vice chairwoman in Midland, N.J. "They have never made an urgent push to see what we are doing so far."

Pesatori said the Houston-based Compaq is committed to supporting both the Digital and Tandem user groups.

The recent mergers may inspire a melding of the two user groups, said officers from both organizations. "There is going to be a need for a representative base of users who are going to stand up and tell Compaq these are the things we want you to address," Reeder-Highleyman said. □

Compaq to back Tandem

CONTINUED FROM PAGE 1

dem Computers, Inc.'s high-end hardware and software. The company also is on track to deliver a major NonStop Kernel (NSK) upgrade in 2000 and a new high-end Himalaya server by 2002, he said.

Pesatori also said Compaq will continue work on improvements to Digital Equipment Corp.'s OpenVMS and Digital Unix operating systems and its Alpha processor line (see related story, page 16).

Compaq has said it will use technologies from Tandem and Digital in furthering its own high-availability Windows NT and Internet strategies. But before Pesatori's remarks, some users of older technologies waited for statements from Compaq and came up lacking.

Terry Davis, vice president of IS at Home Hardware Stores, Inc., a $1.2 billion distribution company in St. Jacobs, Ontario, is one. "My concern is that Compaq just does not understand the nature of large enterprise environments and the generally high regard OpenVMS customers have for that product," Davis said.

Gary Davis, president of Animation House, Inc., a longtime Digital workstation user in Evansville, Ind., said, "Regardless of the publicity and what Compaq is saying, I am concerned about the future of Alpha" processors when Intel Corp.'s Merced starts shipping.

Still, Compaq's statements so far about supporting OpenVMS are reassuring, said Joseph Pollizzi, president of the Digital Equipment Computer Users Society in Baltimore.

Tandem system users, meanwhile, said little has changed for them under Compaq.

But that hasn't stopped questions about core technologies such as NSK and Himalaya fault-tolerant servers, said Janice Reeder-Highleyman, president of The Sombers Group and vice chairwoman of the International Tandem Users Group in Midland, N.J. "A lot of Tandem customers are extremely concerned because they are not yet convinced about Compaq's commitment" to Tandem technologies, Reeder-Highleyman said.

She said Pesatori's comments were potentially good news for Tandem shops, but users would "be watching very carefully to see what actually happens. But it is nice that they are putting a time frame on a deliverable product. The fact they are willing to make this sort of a commitment is very positive."

Examples of Compaq's technology portfolio:

Operating system
• Windows NT
• Digital Unix
• OpenVMS
• SCO UnixWare
• Tandem NSK
System hardware
• Consumer PCs and notebooks
• Intel-based commercial PCs, workstations and notebooks
• 64-bit Unix and NT Alpha servers and workstations
• Himalaya Non-Stop Servers and Turbo-Laser Alpha systems
Processors
• x86-based
• Pentium
• Alpha
• MIPS

Neil Clark, executive director of ITUG in Chicago, said Tandem users are eager for Compaq to show it is investing money and resources to upgrade their technologies.

"If these are upgrades that the management under Compaq approved, it would be a significant sign" about Compaq's commitment to the Tandem technology, Clark said.

Such user concerns are coming to the fore at a time when Compaq's acquisition of Digital greatly broadens the portfolio of technologies and operating environments it is committed to support (see chart). Observers have predicted that the next few months could prove wrenching for Digital users as Compaq makes decisions on which product lines to merge, drop or continue to support.

Compaq needs to take aggressive steps to address users' concerns with specific product timetables and migration plans, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

"It is a bit of a catch-22 situation. Users want to know what Compaq will do long term so they can go ahead with their own planning, and the vendor is saying that really depends on how many systems you buy," Garden said.

Pesatori, a former Digital executive, disagreed. "The major telcos in the world are our customers, [and] over 90% of the major [chip] fabs and over 80% of the electronic file transfers" in the world now run on Compaq systems, he said. □

Leaders convene to talk IT

By Matt Hamblen

WORLD LEADERS and shapers of information technology markets will convene this week in Fairfax, Va., at the 1998 World Congress on Information Technology to share ideas about bringing IT to societies where computers and communications networks are in short supply.

For example, Acer Group CEO Stan Shih plans to unveil details of Acer's XC Computer, which was first announced last November. It is expected to retail for $200 and to bring personal computing to a larger share of the population, especially in developing countries such as China, an Acer spokeswoman said.

Mikhail Gorbachev, former president of the former Soviet Union, is expected to analyze IT's effect on the re-emergence of Russia. An adviser to Nippon Steel Corp. in Japan will discuss the information explosion in the steel industry.

Conspicuously absent from the list is U.S. Vice President Al Gore, a frequent proponent of IT investment in developing nations.

Session topics will focus on the needs of the consumer in emerging markets, planning for a global IT workforce and expanding electronic commerce in all countries.

The speakers will include top technology officers at AT&T Labs, Mobil Corp. and Eli Lilly and Co., and CEOs from Acer, Dell Computer Corp., Oracle Corp. and Netscape Communications Corp.

The conference also will feature speeches by leaders from throughout the world, including Gorbachev and Margaret Thatcher, former prime minister of Great Britain. Conspicuously absent from the list is U.S. Vice President Al Gore, a frequent proponent of IT investment in developing nations. □

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

Millennium madness

A 400-year-old instrument for charting the position of the sun and moon has been hit by the millennium bug, according to the curator at the Liverpool Museum in the U.K. The Equatorium, a brass instrument built around 1600, is essentially a time line for celestial sightings. But the time line ends with the year 1999, the BBC reports. "I find it extraordinary to think of the vision of the maker who made sure this instrument could be used 400 years into the future," the curator says. "But now those 400 years are coming to an end."

The year 2000 computer problem has produced a vocal group of doomsayers who are preparing for the total breakdown of society as we know it. For example, the Web site at *www.y2kprep.com* offers a "chaos protection kit" full of information to help your family get the necessities of life even if credit cards won't work and the banks are all closed. Another doomsday Web site (*www.y2knet.com*) offers 12 survival tips, from securing hard copies of important documents, to protecting financial assets, stockpiling food and finding water. A recent seminar topic: "Marital Problems Over Y2K," presented by Karen Anderson, founder of Y2K Women.

DON'T GET AMBUSHED AGAIN

A perfect complement to the "boss key": A computer rearview mirror that gives the user advanced warning of cubicle visitors. The convex mirror, developed by Cyber Eyes, Inc. in Cleveland, mounts on any monitor and is available at OfficeMax and Staples stores for $4.99.

'Interactive candy' market emerges

The San Jose Mercury News has spotted the latest craze: Sound Bites, a chip-powered lollipop holder that plays music, special effects or voices in your head when you bite down on the sucker it holds. The vibration goes through your teeth to your inner ear.

Office furniture of the future

Herman Miller, Inc. in Zeeland, Mich., has designed next-generation, ergonomic furniture that allows "knowledge athletes" to work while sitting on the floor, in a chair or standing. With the Acrobat workstation, the monitor can be moved up or down a central "tower" with just a touch, thanks to a counterbalancing mechanism. "Acrobat is designed to encourage people to move while they work," says designer Richard Holbrook. And the workstation can be moved from office to office for team projects.

Inside Lines

Three Rs, again

Retraining workers is a common way for companies to fill vacant IS jobs. But according to a Coopers & Lybrand survey of 441 CEOs, 27% of U.S. companies find it necessary to train workers in what are considered basic skills. Specifically, 15% are training in mathematics, and 14% are training in reading.

Portal sharing on the Web

So you want to put up a Web site. What do you do if the Web site moniker you've chosen is shared by others? You could do what the folks at Advanced Fiber Communications did: Set up a shared home page with the other groups (in this case, Alabama Farmers Cooperative and American Finance) and let users find their way to your site (*www.afc.com*) from the shared "portal."

The Rhapsody files

So is Rhapsody dead or not? After saying last month that it was stopping plans to replace the Mac OS with the NextStep-based Rhapsody, Apple Computer now says the core of Rhapsody — called the Yellow Box — may be reborn later this year as part of a Java strategy. Meanwhile, testers of the original Rhapsody say the new strategy is really a ruse meant to fool Macintosh software developers, who objected to porting to Rhapsody. Apple acknowledges only that Mac OS X will support some source-level Rhapsody programs, many old Mac OS 8 and all new Mac OS X programs.

What's up, Warner Bros.?

It's all hush-hush for now, but Warner Bros. Online plans to create an Internet-only television show for its Web site beginning next fall. A spokesman for the Burbank, Calif., company said it was impossible to send out previews — it even declined a request from a top executive at Compaq Computer — but there will be select showings on the West Coast this week.

Keeping up appearances

Microsoft and Novell have touted a spirit of cooperation, saying they're working together to make their products more interoperable. Behind the scenes, though, the two companies are still scrapping. Novell officials are telling customers its Novell Directory Services (NDS) for Windows NT does a better job of managing NT than NT itself does. Microsoft's response includes white papers and statements posted on its Web site saying that Novell's product will break the security mechanisms in NT 4.0.

One way to increase Web traffic

Starting July 1, a Japanese computer security company will offer 1 million yen (about $7,089) to the first hacker to penetrate its Web site. The hacker must retrieve specific files to prove he broke in. But just whose eyes will be prying? The company, General Accounting and Business Consulting in Tokyo, will monitor attempted hacks to understand how online breaking and entering works. See *cybg.gab.co.jp* after July 1 for details.

Go to the video

Cisco Systems' newly formed Video Business Unit is expected this week to announce its first product, a client/server software package designed to drive deployment of video technology in user companies. The San Jose, Calif., networking behemoth didn't divulge additional details.

Installing enterprise resource planning applications certainly can keep you up at night. One SAP R/3 project manager was putting in his 30th straight hour of work on a recent Friday as he, a co-worker and some consultants tried to move the software from a development system to the production machine. Another four to five hours awaited before the job was finished and everyone could leave and "go into hibernation," he said. You can send E-mail day and night to news editor Patricia Keefe at patricia_keefe@cw.com. Voice mail works, too, at (508) 820-8183.

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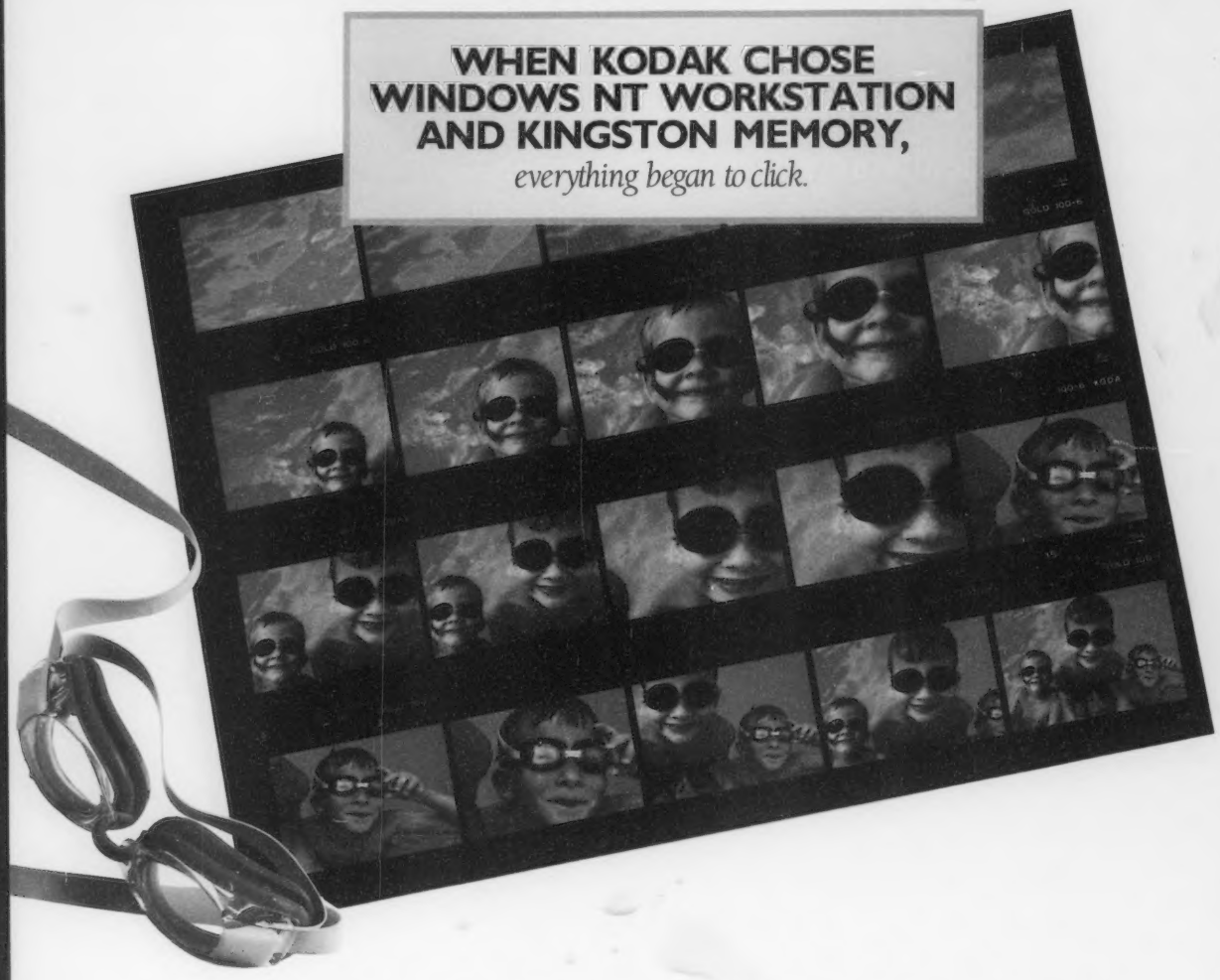
WHEN KODAK CHOSE WINDOWS NT WORKSTATION AND KINGSTON MEMORY,

everything began to click.



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